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QUARTERLY REPORT

PHILIP MORRIS EUROPE

RESEARCH AND DEVELOPMENT

[redacted]

2021607895

JANUARY – MARCH 1989

STRICTLY CONFIDENTIAL

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DIVISION : RESEARCH

SUBJECT TITLE : TITANIA

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Hofer-M. (MIH), Berney-J. (JBE)

KEYWORDS : bacillus, spore, germination, water- activity, inhibition, activation, heat-shock

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OBJECTIVE

To study risks of physiological changes in the bacterial population during tobacco processing and storage, and to investigate their impact on the organoleptic and chemical properties of tobacco.

STATUS

The combined effects of water activity (aW) and heat-shock on Bacillus spore germination were investigated in treated Burley, tobacco after cutting and cut filler media.

RESULTS

Simulation media were prepared as described previously [1] using the 3 tobacco extracts in the water activity range 0.9-1.0, as described in a previous quarterly report [1]. Germination was followed in a control without heat-shock and in versions activated at 60 and 70°C [2]. Fig. 1 shows the effect of aW on spore germination for the three tobacco extracts. For aW of 1.0, germination is completed after two hours' incubation for all three tobacco extracts. However, when aW decreases to 0.97, germination is proportional to the advance in the process i.e. 60% in treated Burley, 40% in tobacco after cutting and less than 10% in the finished cut filler. This corroborates the information obtained in project EUROP with different blend constituents [3].

Figs. 2 and 3 show the impact of heat activation at 60 and 70°C on Bacillus spore germination for the same tobacco media. Germination is clearly activated by a heat-shock within the aW range of 0.90-0.97. Germination yield is improved by 40% in

tobacco after cutting and cut filler and by 20% in treated Burley. Surprisingly germination seems to be deactivated by heat-shock in Burley extract for aW of 1.0. This phenomenon was observed for both activation temperatures.

CONCLUSIONS

Germination of Bacillus pumilus spores varies considerably depending on tobacco, processing step and water activity. In general heat-shock activates germination for aW below 1.0. Microbial risk of spore germination is now established for situations corresponding to aW value between 0.9 and 1.0 with a heat activation between 60 and 70°C. It is not the global condition applied in a dryer that should be considered but the local situation encountered at the surface of tobacco.

PLANS

Determine the actual conditions regarding aW and temperature encountered on the tobacco surface at a given time during the various humidification and drying steps of the ML process.

Establish for potential critical steps the nature of the risk by simulating deviations of process conditions.

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[2] Hofer-M., Berney-J., Project TITANIA, Quarterly Report, October- December 1988.
[3] Kälin-P., Project EUROP, Quarterly Report, July-September 1988.

Figure 1 :
GERMINATION IN TOBACCO EXTRACTS IN FUNCTION OF WATER ACTIVITY
WITHOUT HEAT-SHOCK

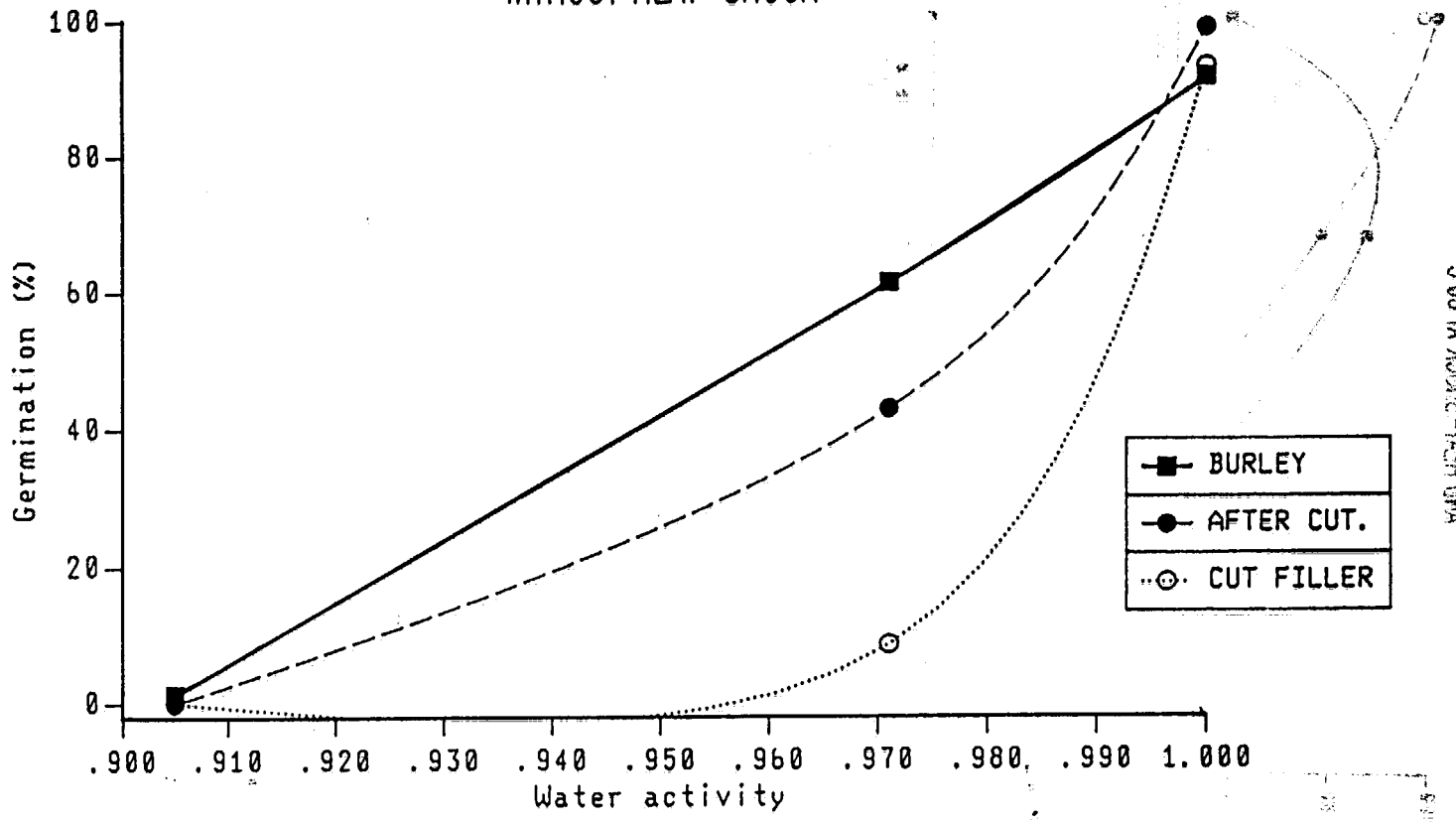


Figure 2 :
GERMINATION IN TOBACCO EXTRACTS IN FUNCTION OF WATER ACTIVITY
AND HEAT-SHOCK AT 60°C

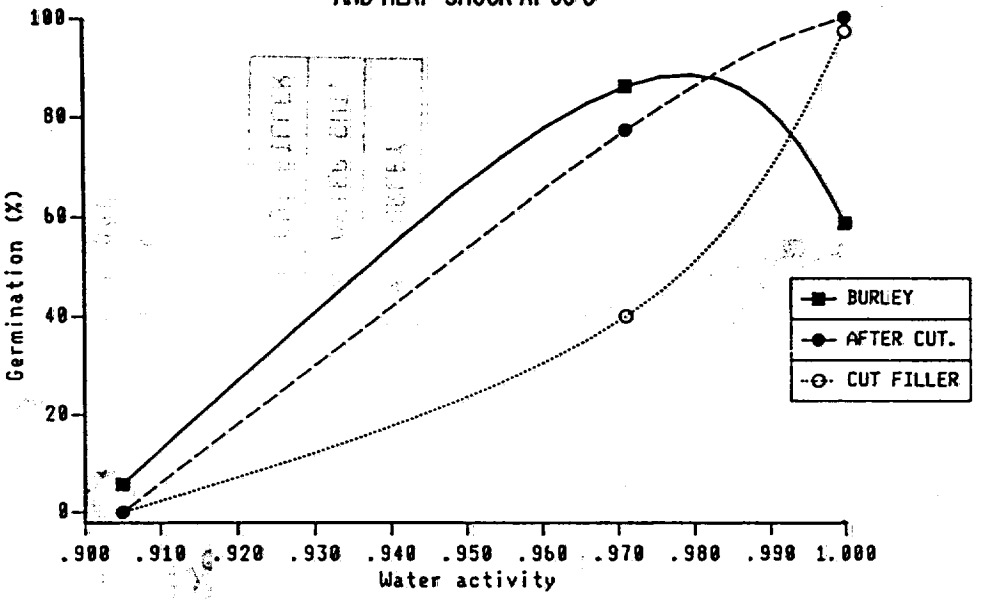
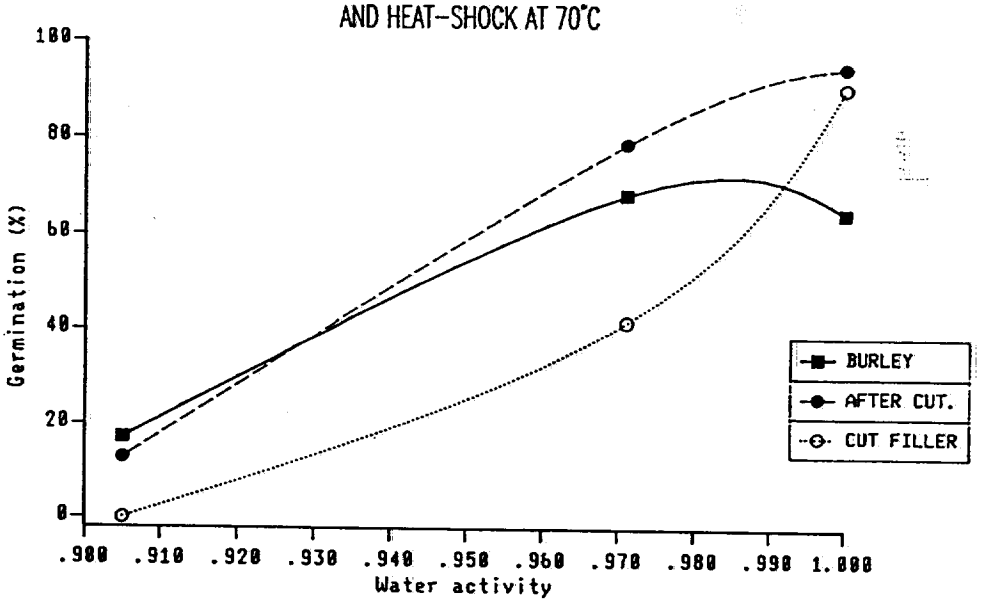


Figure 3 :
GERMINATION IN TOBACCO EXTRACTS IN FUNCTION OF WATER ACTIVITY
AND HEAT-SHOCK AT 70°C



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DIVISION : RESEARCH
SUBJECT TITLE : EUROP

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Kälin-P. (PAK), Hofer-M. (MIH)

KEYWORDS : bacteria, bacillus, biocontrol, extract, d-alanine, spore, germination, outgrowth, vegetative-cell, antibiotic, inhibition

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OBJECTIVE

To control the germination of bacterial spores during tobacco processing and the bacterial proliferation in the RL process in order to replace traditional preservative systems by a biocontrol agent.

STATUS

The synergy between D-alanine and the antibiotic chloramphenicol (CMP) on bacillus spore germination was evaluated in tobacco extract.

The evaluation of D-alanine as inhibitor of bacillus spore germination in tobacco extracts was completed. D-alanine has proven to be an effective and specific biocontrol agent for tobacco microflora. The major advantages of D-alanine compared to traditional preservative systems are the following :

- it is a "tobacco-identical" substance (alanine in the L-form being naturally present on tobacco) not subject to regulations
- it is water soluble
- at the concentrations considered, D-alanine has no negative impact on cigarette taste.

RESULTS

The presence of outgrowing and vegetative cells interferes with germination inhibition of dormant spores [1]. In order to determine the minimum effective concentration of D-alanine as germination inhibitor, chloramphenicol, an antibiotic blocking protein synthesis, was tested in combination with D-alanine in tobacco extract inoculated with a B. pumilus spore suspension. Germination was measured as described in a previous report [2].

Tested alone, CMP (20 ppm) had shown no effect on spore germination process but cell outgrowth was blocked for several days.

In association with 180 ppm D-alanine, the germination rate decreased from 60% to 3% after two hours' incubation at 37°C. After five hours, the germination yield was only 5% instead of 92% for the control. All these results were confirmed by microscopical observations.

In conclusion, in the presence of 20 ppm of chloramphenicol, the minimal germination inhibitory concentration of D-alanine is 180 ppm.

PLANS

A final report on the evaluation of D-alanine as germination inhibitor in tobacco extract is in preparation.

Evaluate D-alanine as spore germination inhibitor for tobacco during processing and storage.

REFERENCES

[1] Kälin-P., Hofer-M., Project EUROP, Quarterly Report, October-December 1988.
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DIVISION : RESEARCH
SUBJECT TITLE : PHOEBUS
PERIOD COVERED : JANUARY - MARCH 1989
WRITTEN BY : Hofer-M. (MIH), Kälin-P. (PAK)
KEYWORDS : tobacco-identical, preservative, bacillus, spore, germination, Flue-cured, oriental, inclusion, complexation, beta-cyclodextrin, inhibition, ph, dissociation

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OBJECTIVE

Identify and evaluate tobacco-identical substances able to block specifically the microbiological activity of tobacco microflora.

STATUS

An inhibitory effect on Bacillus pumilus spore germination was observed in Flue-cured and Oriental tobacco extracts but not in Burley, cut filler or RL feedstock extracts [1]. This inhibitory potential was confirmed by adding Flue-cured and Oriental concentrates to RL feedstock extract. The pH of the extract was proved to be one of the factors affecting spore germination. The inhibitory effect was shown to be caused by a compound or a class of compounds that can be complexed by molecular inclusion in beta-cyclodextrin.

RESULTS

Flue-cured (lot 1510) and Oriental (lot 4491) tobacco was extracted as described previously [2] and the extracts concentrated to a 1:1 ratio in a rotovapor. RL feedstock extracts (SEL) supplemented by increasing quantities of Flue-cured and Oriental concentrates were inoculated with Bacillus pumilus spore preparations. Germination was recorded over time [1]. Fig. 1 presents inhibition effects after two hours' incubation. By increasing the concentrations of Flue-cured and Oriental extracts in the RL medium, germination yields decreased rapidly.

A pH value of ca. 5.0 was identified as one of the causes of germination inhibition in tobacco extracts. Figs 2 and 3 show for

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Flue-cured and Oriental extracts, both with a natural pH value of ca. 5.1, that if the pH is raised germination takes place and germination rate is proportional to the pH increase. In the Flue-cured extract, germination was almost completed after 10-15 min. incubation at pH 9.0 (the highest pH tested). Conversely, in Burley extract at a pH of 5.6 germination is activated. If, however, the pH is lowered to 5.0, germination is inhibited (Fig. 4). The same is found for the SEL extract (pH 5.2). Fig. 5 shows that germination is activated by increasing the pH of the medium.

Beta-cyclodextrin (BCD) is a cyclic, non-reducing oligosaccharide composed of 7 glucose units linked by alpha-1.4 glycosidic bonds [3][4][5], and formed from starch substrates by cyclodextrin glycosyltransferase. BCD readily forms inclusion complexes with various chemicals by incorporating them into the hydrophobic cavity of the molecule, the outer surface of the torus being relatively hydrophilic. Organic compounds, when dissolved in water, often exhibit a preference for a more hydrophobic environment. When all or even part of the molecule fit into the BCD cavity a complex will be formed. The more hydrophobic or insoluble the guest substance with a molecular mass between 80 and 250, the more readily it will form the complex. Conversely the more reluctant it will be to dissociate.

Flue-cured (lot 1510) and Oriental (lot 4491) tobacco extracts were treated with 10% free BCD. BCD was dissolved in the extracts at 70°C and then the solutions cooled gradually while stirring. The cristalline complexes precipitating out were filtered and dried [3]. Filtrates of both tobaccos were inoculated with Bacillus pumilus spores in order to test germination ability. Surprisingly the inhibitory effects had disappeared. Germination rate after two hours incubation at 37°C had increased from 18 to 75% in Oriental extract and from 11 to 73% in Flue-cured extract. Fig. 6 shows a five-fold increase in germination in both tobacco extracts supplemented with only 1% BCD after two hours' incubation, i.e. BCD complexes the substance(s) responsible for germination inhibition in Flue-cured and Oriental tobacco extracts. The cyclodextrin complexes appeared to be very stable with a solubility compared to pure BCD [6].

CONCLUSIONS

The inhibitory effect of Flue-cured and Oriental tobacco on Bacillus spore germination was confirmed by testing the concentrated extracts in SEL medium.

The importance of the pH in germination inhibition lets us assume that it is the undissociated form of the unknown compound (probably an acid) that is active and that its dissociation constant is low.

The inhibitory principle was complexed by molecular inclusion into free BCD.

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PLANS

Define in more details the impact of pH on the spore germination process in tobacco extracts. This will be helpful to establish the exact dissociation constant of the compound.

Investigate the use of BCD-polymer (BCD cross-linked with epichlorohydrin) in batch process to remove and concentrate inhibitory compounds identified and evaluated after dissociation, the substances released as potential biocontrol agent [7][8].

Investigate the application of BCD-polymers in the removal of undesirable components from tobacco extracts.

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[8] Yu-E.K.C., Novel decaffeination process using cyclodextrins; Appl. Microbiol. Biotechnol., 28, 546-552, 1988.

Figure 1 :
INHIBITORY EFFECTS OF ORIENTAL AND FLUE-CURED EXTRACTS
ON SPORE GERMINATION IN SEL MEDIUM

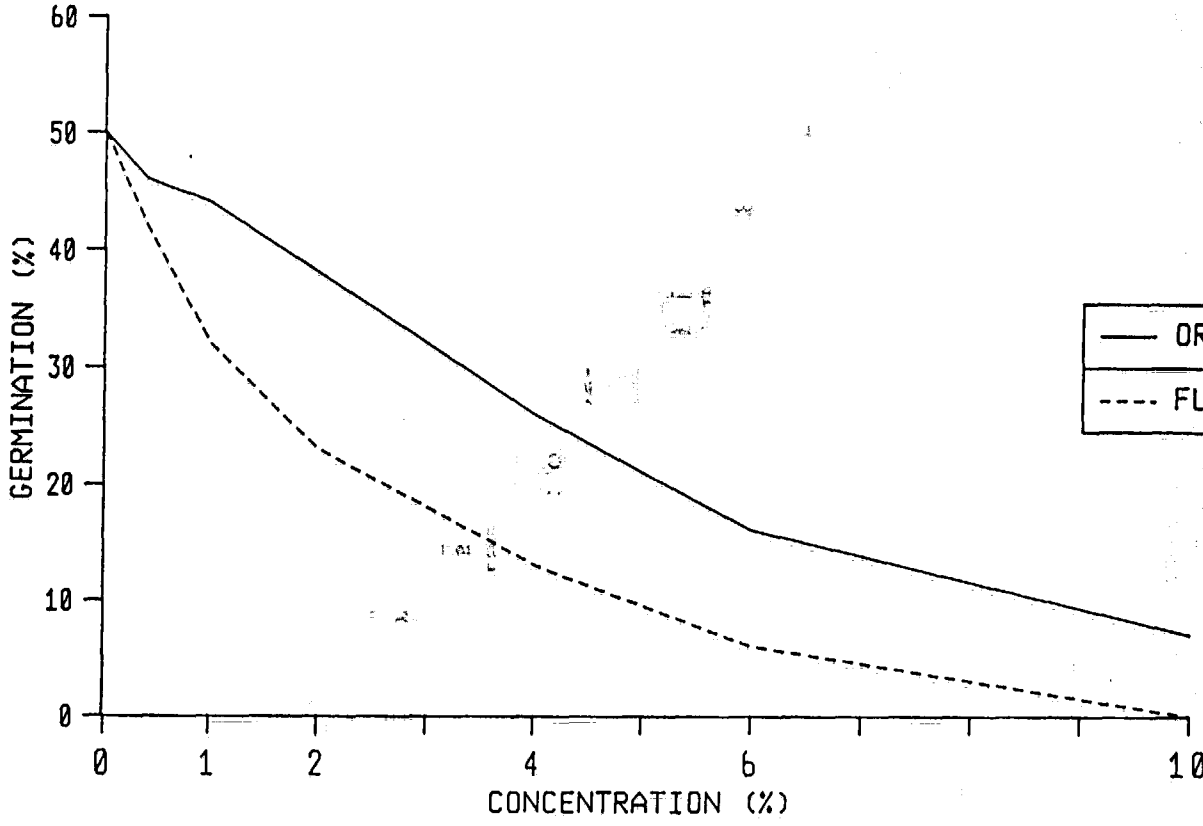

Figure 2 :
INFLUENCE OF pH ON SPORE GERMINATION
IN FLUE-CURED EXTRACT

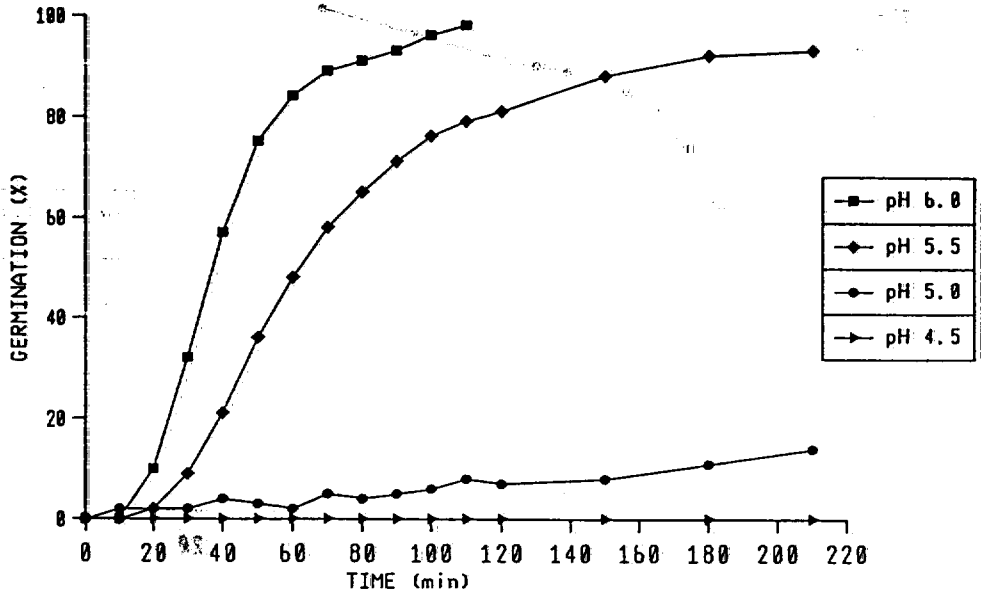

Figure 3 :
INFLUENCE OF pH ON SPORE GERMINATION
IN ORIENTAL TOBACCO EXTRACT

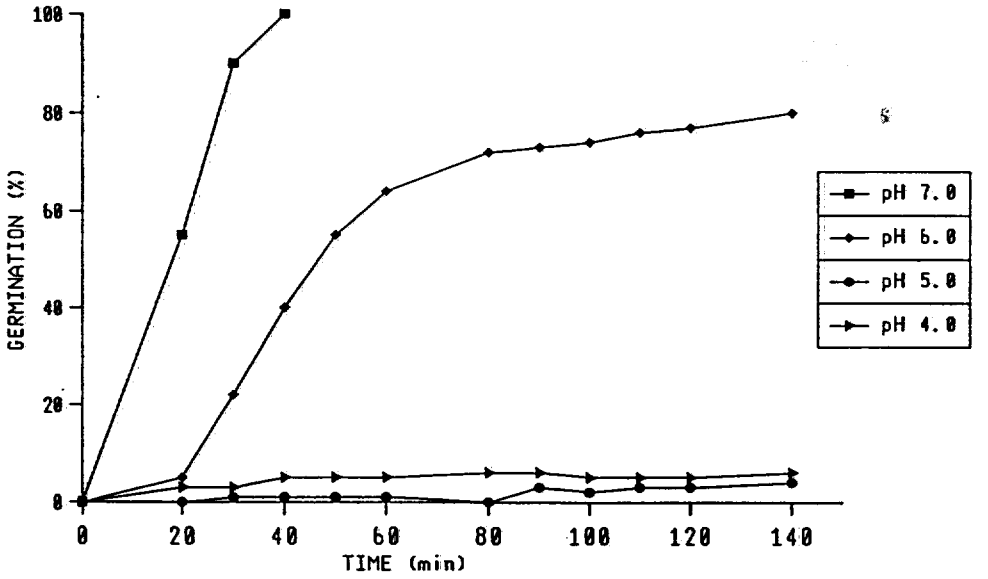

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Figure 4:
INFLUENCE OF PH ON SPORE GERMINATION
IN BURLEY TOBACCO EXTRACT

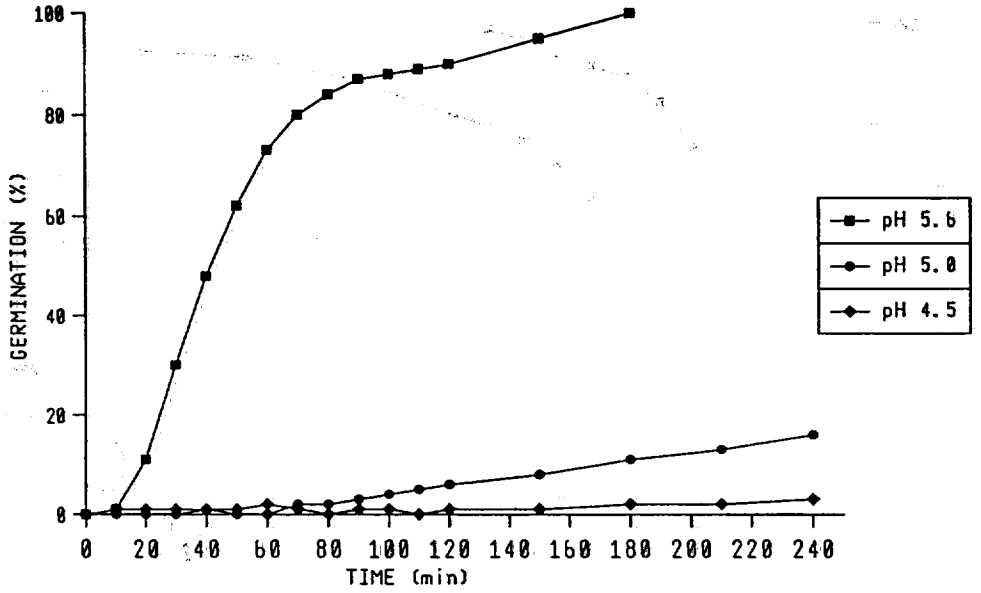

Figure 5 :
INFLUENCE OF pH ON SPORE GERMINATION
IN SEL MEDIUM

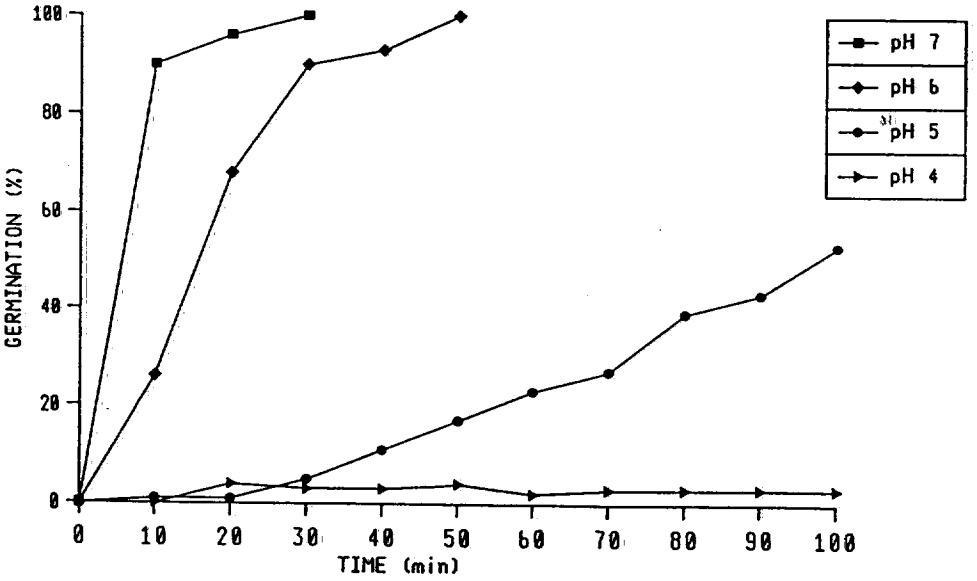

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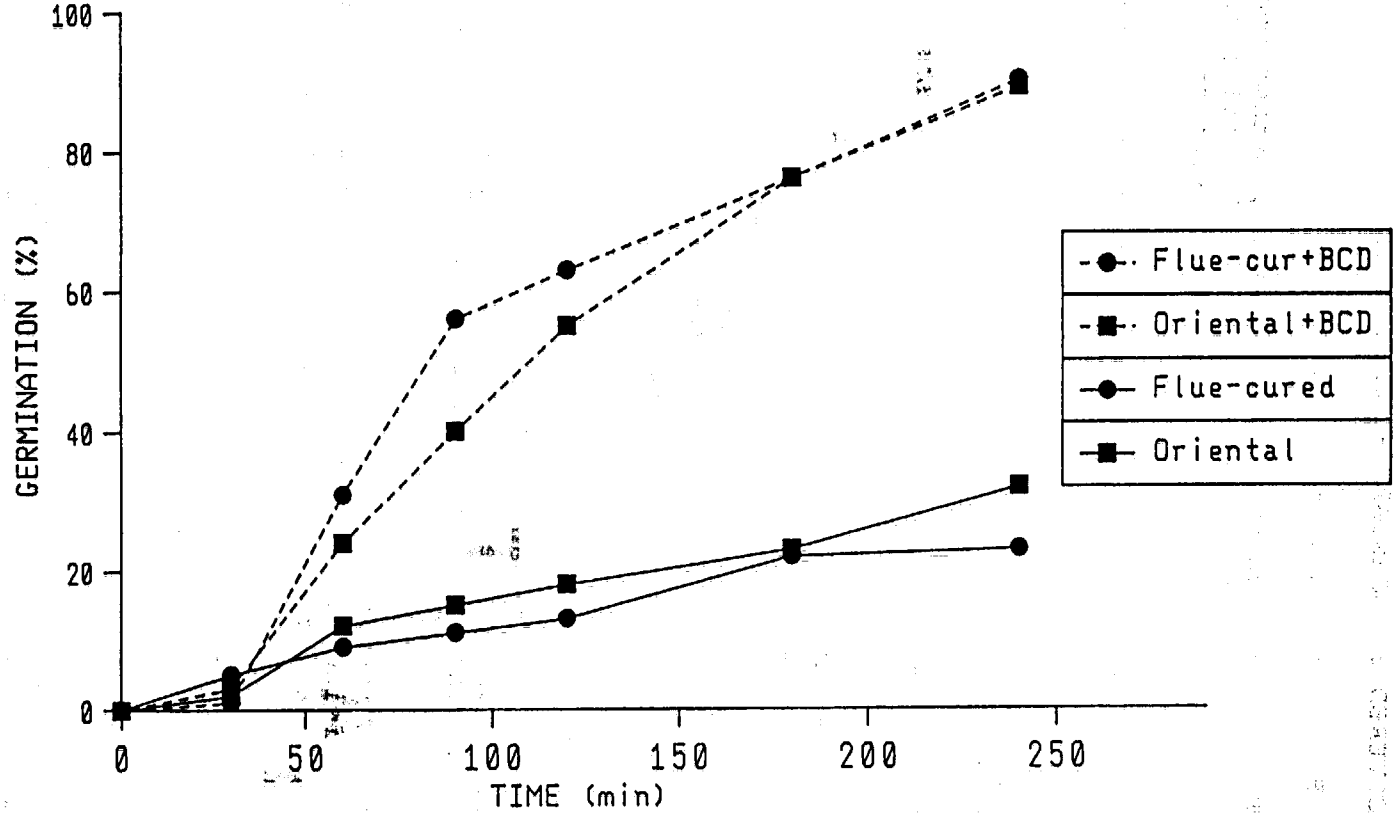
Figure 6 :
EFFECT OF 1 % BCD ON SPORE GERMINATION



DIVISION : RESEARCH

SUBJECT TITLE : PESTICIDES

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Amati-D. (DAA)

KEYWORDS : culture, moon, saturn, methoprene, tla, maleic-hydrazide, mh-30, dithiocarbamate, dtc, bentazone, data-bank, statistics, eec

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OBJECTIVES

To provide an analytical service for the analysis of pesticides in tobacco and cigarette filler.

To develop analytical methods for new pesticides and to improve existing methods.

RESULTS

Project CULTURE

- Pesticide routine analysis
  Trials to determine organophosphorous pesticides together with the pesticides already analysed using GPC technique are continuing [1].

- Pesticide residue statistics 1988
  The pesticide residue analysis statistics of samples analysed during 1988 were performed. The statistics include PMG/PMH-TLA, Australian and offer samples.

- Pesticide data bank
  With support of Leaf Department, a data bank with all pesticides permitted and/or banned for tobacco in 17 countries has been established.

- Bentazone
  A method for the analysis of the herbicide bentazone in cigarette paper was developed. The paper is extracted with acetone and bentazone contained in the extract is derivatized with diazomethane. A final clean-up by GPC prior to GC analysis is performed.

The method was applied to 4 Wood Pulp and 2 Hemp/Flax cigarette papers from PMG. No residues were detected (detection limit 0.05 ppm) [2].

- Offer samples
Eighteen TU-FC and 8 TU-BU samples were analysed for dithiocarbamates. Twenty-five samples had residues between 1.1 and 31.0 ppm. One sample had 52.5 ppm (recommended value 50 ppm) [3].

Four IT-FC samples were analysed for MH-30. Three samples had MH-30 residues between 59.6 and 65.3 ppm [4].

- Agronomy Department EEC/EEMA
At the request of the Agronomy Department EEC/EEMA, 1 BG/BU sample was analysed for standard pesticides. No residues were detected [5].

- Methoprene
Thirteen tobacco dust samples from Dianex trials were collected at FTR factory and analysed for methoprene. Residues ranging between 6.0 and 69.6 ppm were found [6].

Two tobacco samples from Kabat trials to study its stability and efficiency were analysed for methoprene.

- EEC project
Six tobacco samples were analysed for pesticide residues. The residues were below the prescribed or recommended limit values set by German or American regulations [7].

- Maleic hydrazide
Fourteen PMH-TLA samples and 14 FTR-TLA samples were analysed for MH-30 [8][9][10]. Nine PMH-TLA samples and 7 FTR-TLA samples had MH-30 residues above the recommended value of 80 ppm (Table 1).

Dutch, French and German cigarette brands were bought on the respective markets in 1988 and were analysed for MH-30 [11]. Results are given in Tables 2, 3 and 4 and in Figs 1 to 3 respectively. The highest amount with 72.4 ppm was found in Barclay-NL. The results for BE, GB, IT and CH brands were reported in the September-December 1988 Quarterly Report.

Average MH-30 residues in US-FC/BU tobaccos of the crop years 1981 to 1987 were calculated using results obtained for tobaccos analysed at R&D PME [12] (Table 5 and Fig. 4). MH-30 residues obtained for BU tobaccos appear to be constant from 1981 to 1986 (mean value of 64.2 ppm). An increase of about 50% is observed for the 1987 crop (99.7 ppm). For FC tobaccos, high mean MH-30 residues can be seen in 1981 and 1983, and an increase from 71 to 161 ppm from 1984 to 1987.

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Project SATURN

As an analytical service for PM-Australia, 35 crop 1988 Bright, 16 offshore, 3 ET and 9 cigarette samples were analysed for standard pesticides [13]. In some samples small amounts of endosulfan (max. 1.35 ppm) and DDT (max. 0.22 ppm) were found. DTC residues ranging from 0.1 to 22 ppm were also detected. In 5 Bright and 4 offshore samples MH-30 residues exceeded the maximum recommended level (Table 6).

Project MOON

- PMG-TLA samples and PMG-brands
  As an analytical service for PMG, 33 TLA samples and PMG brands were analysed for pesticide residues [14][15][16]. In 4 TLA samples MH-30 residues exceeded the maximum recommended level of 80 ppm (Table 7). In the PMG brands no pesticide residues above the German tolerances were found.

  Average MH-30 residue content of the PMG-brands manufactured in 1987 and 1988 were calculated using residue amounts found for the quarterly check. The values are summarized in Table 8 and expressed in graph form (Fig. 5). For all brands, except the MPH-180-IT an increase of MH-30 residues is observed from 1987 to 1988.

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[16] Memo from Amati-D. to Probst-K., March 2, 1989.

TABLE 1 : FTR-TLA and PMH-TLA samples with MH-30 residues above the recommended value

AFF	Lot	CY	Lot description	MH-30 (ppm)
002	3702	87	1BU1US/21CAFSTR	90.0
002	3705	87	1BU1US/42C57STR	101.6
002	6039	88	1FCUSP/42POSTR	92.0
002	3691	85	1BU1US/32C34STR	88.8
002	3703	87	1BU1US/21XCAFSTR	112.1
002	3700	87	1BU1US/41BAFSTR	88.0
002	3704	87	1BU1US/32C34STR	99.0
008	3713	87	1BU1US/21XCAFSTR	100.7
008	3714	87	1BU1US/32C34STR	84.9
008	3716	87	1BU1US/41BAFSTR	109.8
008	3717	87	1BU1US/21CAFSTR	106.1
008	3718	87	1BU1US/21XCAFSTR	141.9
008	3659	85	1BU1US/42C57STR	83.2
008	3669	85	1BU1US/32C34STR	81.2
008	3715	87	1BU1US/42C57STR	105.6
008	3712	87	1BU1US/21CAFSTR	90.8

TABLE 2: MH-30 in Dutch brands, 1988

Brand	Company	MH-30 (ppm)
Marlboro	PM	52.2
Caballero	Laurens	51.9
Camel Filter	RJR	28.7
P. Stuyvesant, KS	Turmac	13.9
Pall Mall Export, Filter	Turmac	40.3
Caballero, Filter, KS	Laurens	43.7
Gladstone Mild, Filter	BAT	15.0
Camel, NF	RJR	25.5
Barclay, KS	BAT	72.4
Mantano Filter	BAT	11.9
Mantano, NF	BAT	7.7
Caballero Special Filter	Laurens	45.6
Roxy Dual Mild Filter	Niemayer	n.d.

n.d. = not detectable

TABLE 3 : MH-30 in French brands, 1988

Brand	Company	MH-30 (ppm)
Marlboro Filter	PM	44.0
Marlboro Lights	PM	49.1
Philip Morris, Filter, Super Lights	PM	67.5
P. Stuyvesant, KS	Turmac	17.0
Camel Filter	RJR	29.8
Benson & Hedges, Special Mild	BAT	23.6
Gauloises, NF	SEITA	n.d.
Gauloises Filtre	SEITA	n.d.
Gauloises Blondes	SEITA	n.d.
Gauloises Blondes Légères	SEITA	n.d.
Gauloises Légères	SEITA	n.d.
Gitanes, NF	SEITA	n.d.
Gitanes Filtre	SEITA	n.d.

n.d. = not detectable

TABLE 4 : MH-30 in German brands, 1988

Brand	Company	MH-30 (ppm)
Marlboro	PM	55.2
HB	BAT	37.4
Camel	RJR	42.9
Lord Extra	MB	22.7
P. Stuyvesant	REE	38.3
West	REE	33.3
Ernte 23	REE	29.5
Reval, plain	REE	39.3
R6	REE	23.5

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TABLE 5 : Average values in ppm of MH-30 residues in US-FC/BU$_{AT}$ tobaccos between 1981-1987

CY	US-FC	US-BU
1981	143.9 (14)	70.8 (5)
1982	82.6 (9)	56.9 (34)
1983	139.9 (20)	66.2 (3)
1984	70.6 (24)	60.2 (46)
1985	100.8 (35)	64.2 (65)
1986	108.4 (77)	66.8 (36)
1987	161.4 (62)	99.7 (23)

Numbers in brakets represent the number of samples analysed.

TABLE 6 : MH-30 residues above the recommended value of 80 ppm in PM-Australia samples

Origin	Type	MH-30 (ppm)
P. Capponecchia	tips	92.2
A.T. Laspina	lugs	154.4
A.T. Laspina	cutters	85.7
P. Merlo	cutters	107.3
Offshore D		93.9
Offshore F		103.6
Offshore K		118.3
Offshore L		88.3

TABLE 7 : MH-30 residues above the recommended value of 80 ppm in PMG-TLA samples

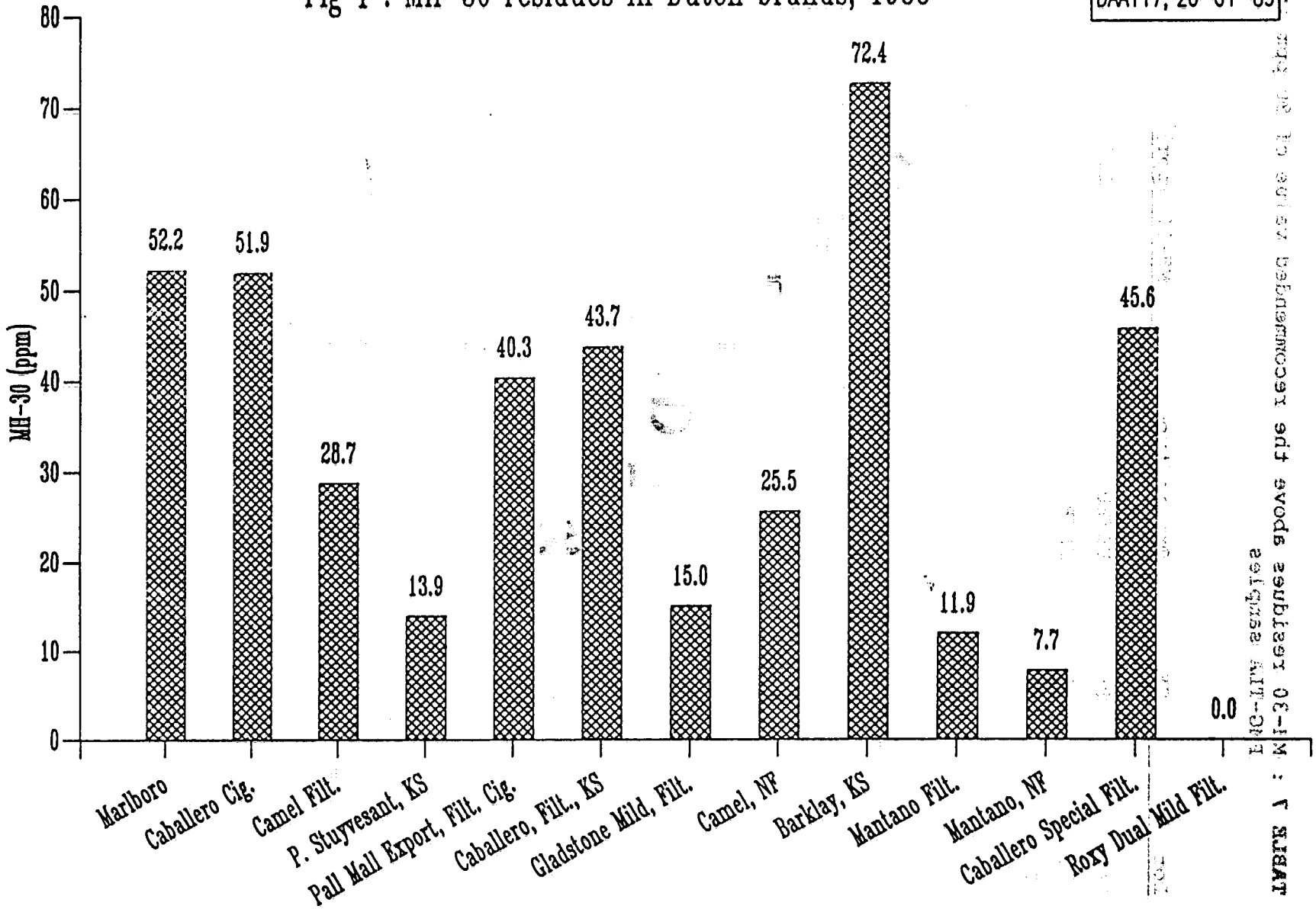
Lot	CY	Origin/type	MH-30 (ppm)
3636	86	US/BU	82.0
3710	87	US/BU	90.2
6084	87	US/FC	169.7
6085	87	US/FC	175.4

TABLE 8 : Average MH-30 residue content of PMG-brands manufactured in 1987 and 1988

Brand	MH-30 (ppm) 1987	1988
MLB 046	41.5	52.5
MLX 046	45.0	59.5
MLB 160-FR	35.9	38.4
MPH 180-IT	24.9	22.5
LMG 046	22.4	28.8
LMK 046	25.6	32.4
PMT 046	51.4	61.0
MER 046	30.0	41.7
MYO	12.1	13.8

Fig 1 : MH-30 residues in Dutch brands, 1988

DAA117, 26-01-89



RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

Fig 2 : MH-30 residues in French brands, 1988

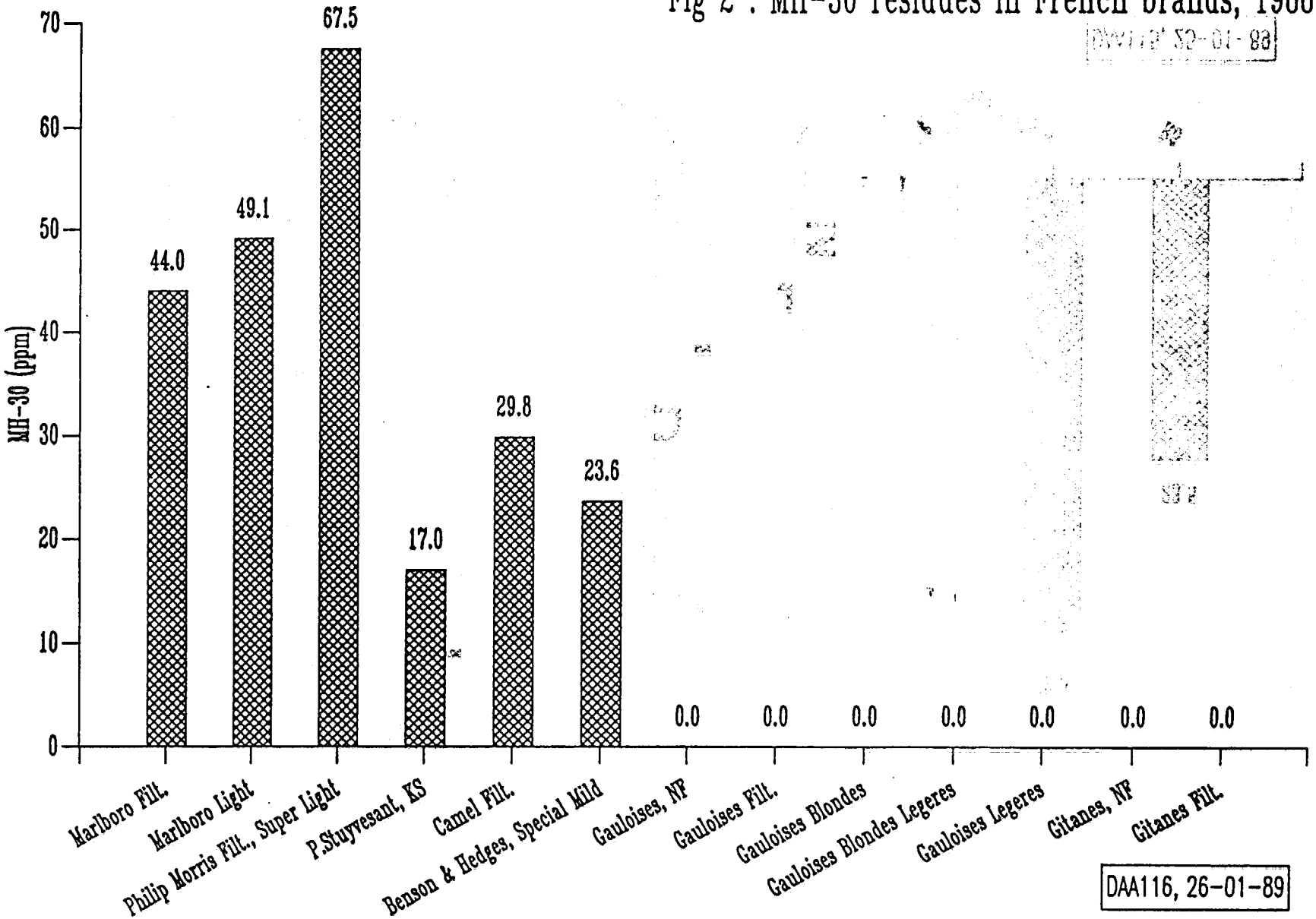
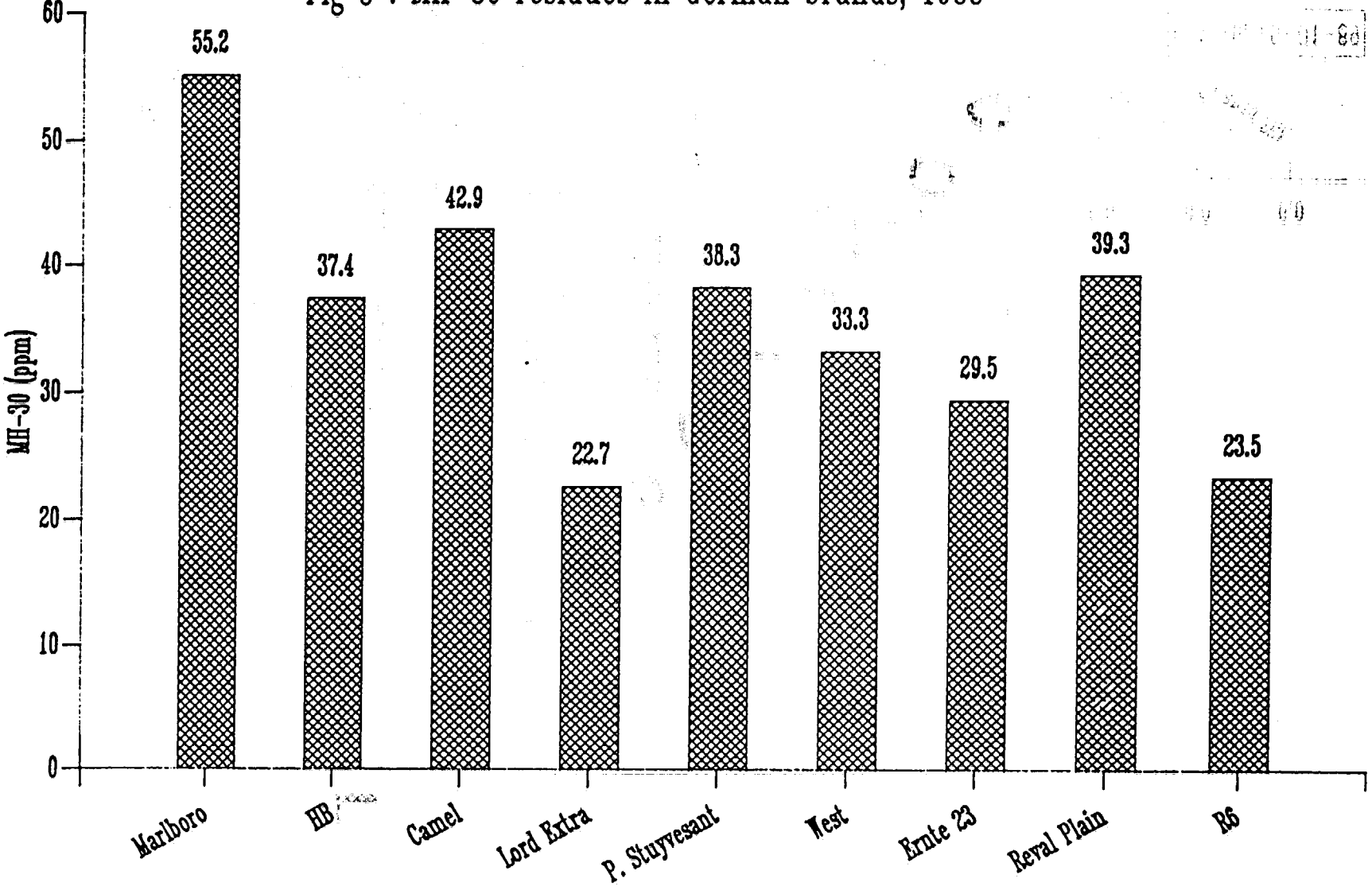
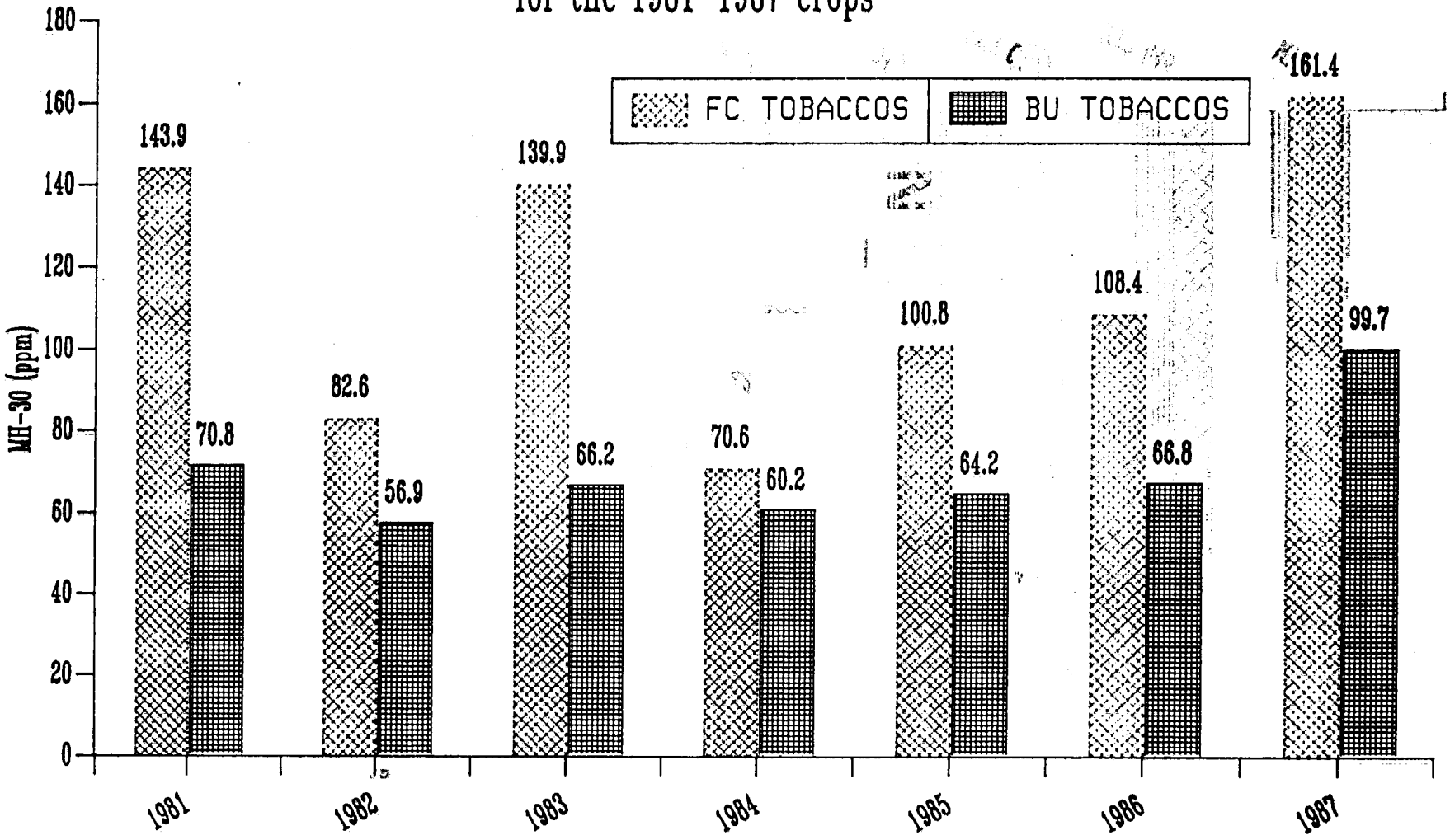


Fig 3 : MH-30 residues in German brands, 1988



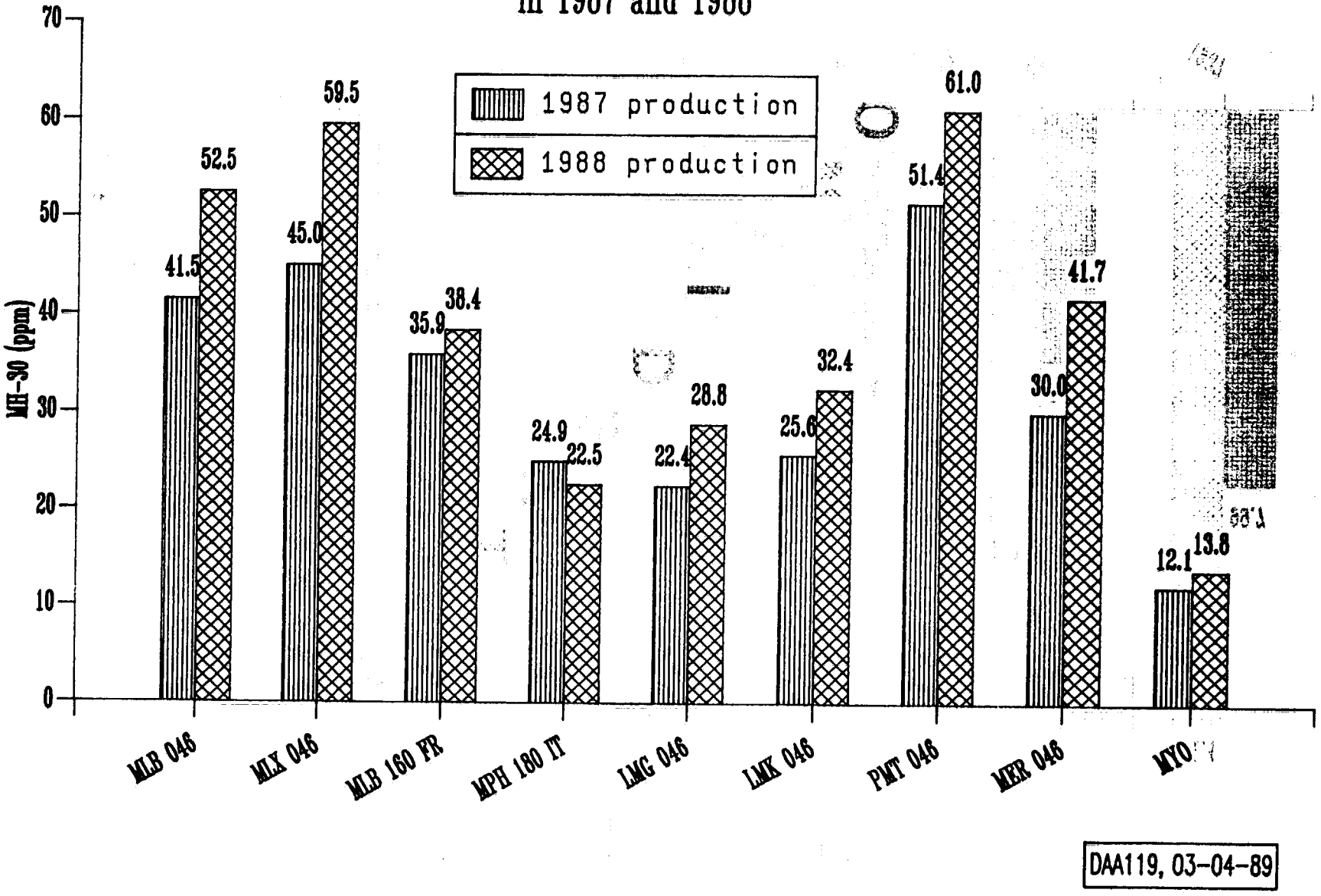
DAA115, 25-01-89

Fig 4 : MH-30 residue contents in US-FC/BU tobaccos for the 1981-1987 crops



DAA118, 13-02-89

Fig. 5 : Average MH-30 residue content of DB-brands manufactured in 1987 and 1988



DIVISION	:	**RESEARCH**
SUBJECT TITLE	:	**ARCHIVE**
PERIOD COVERED	:	**JANUARY - MARCH 1989**
WRITTEN BY	:	**Genoud-Y. (YVG), Murray-M. (MUM)**
KEYWORDS	:	**oriental, tobacco, process, treatment, organoleptic, subjective, cigarette**

OBJECTIVE

To reduce the amount of Oriental tobacco in a typical American blend without changing organoleptic and smoke delivery parameters.

STATUS

Tobacco has been ordered and specifications prepared for a further series of prototypes with reduced amounts of Oriental tobacco and with 100% Oriental tobacco treated at different temperatures.

2021607926

DIVISION : RESEARCH

SUBJECT TITLE : DEIMOS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Bindler-G.N. (GNB)

KEYWORDS : ss, single-cigarette, collection-flask, flow-rate

OBJECTIVE

Develop and evaluate the methodology for single cigarette routine determination of sidestream smoke TPM, nicotine and CO yields.

STATUS

Equipment

The parts of the sidestream smoke (SS) collection system based on the four-port Borgwald smoking machine have been received and the set-up was mounted. It proved to be quite satisfactory upon testing after minor technical modifications. The equipment is now fully operative.

CORESTA Task-Force studies and method validation

To assure that the MS yields that are obtained when smoking in a SS collection set-up and those obtained in free air are the same, a prerequisite is that the sidestream is efficiently cleared from the cigarette while maintaining the air velocity around it below 35 mm/s.

A computer study of the distribution of air velocities within the SS collection chamber was subcontracted to IKOSS in Stuttgart who will make use of the Phoenics modelling program. The results of this study will be used to validate our approach of the flask design, in particular within the proceedings of the CORESTA Task Force. They may also be used to fine-tune the flask geometry. These results should be available by the end of April.

Analytical determinations aiming at investigating the flow patterns and their effect on smoking were performed as well :

The static burning rate of the cigarette is greatly influenced by air drafts, oxygen supply, heat exchanges, etc.. making it a very

sensitive indicator. It was therefore measured over a wide range of total flow rates (1-10 l/min) for 1R4F Kentucky reference cigarettes.

The results obtained with the set-up (integral and with some parts omitted) show that the air deflection under the cigarette is very efficient in shielding it from air drafts, even at high flow rates.

The CO concentration could be mapped inside the chamber around a smouldering cigarette by sampling with a fine capillary probe. The results confirmed the efficiency of the design in sending the major part of the incoming air along the walls.

The slit restriction above the cigarette is meant to allow the smoke plume to pass upwards with minimum deposition but forbid the return of any part of it down to the cigarette. Its efficiency could be illustrated by use of a high speed video camera. This part of the work was performed in Richmond in collaboration with R. Jenkins and D. McRae. Measurements of the coal temperature of the burning cigarette were also performed in different SS collection systems and for different flow rates by use of an IR camera.

PLANS

Work on the optimization of chamber design will be continued in the CORESTA Task Force.

The results of the various validation studies will be made into a paper to be presented at a scientific meeting (TCRC). It is also foreseen that the coal temperature results will be presented in a separate paper by R. Jenkins at the same meeting.

Adaptation of other analytical systems to the SS collector will be investigated. These will include an optical absorption detector for assessing visibility and a flame ionisation detector to assess total gas phase organics.

2021607928

DIVISION : RESEARCH
SUBJECT TITLE : HUMECTANT

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Renaud-J.M. (JMR)

KEYWORDS : humectant, humectant-survey, germany, sorbitol

OBJECTIVE

To perform a regular survey on the use of humectants in brands of the EEC and EEMA regions (project AQUARIUS).

STATUS

The leading DB brands bought on the market in December 1988 were analysed for glycerin, propylene glycol, sorbitol, 1.3-butanediol triethylene glycol and mono-, di-, triacetin [1]. Glycerin, propylene glycol and sorbitol were found. The amounts are listed in Tables 1, 2 and 3 and illustrated in Figs 1 and 2. For HB, a continuous increase of the glycerin content, from 0.1% to 1.7%, could be noticed between Feb. 1987 [2] and Dec. 1988, whereas the propylene glycol content decreased from 2.3% to 1.8%. In addition and for the first time a small amount of sorbitol was found in this brand. For all the other brands a general decrease of the propylene glycol content between 0.1% and 0.6% was found as compared to the last survey whereas the glycerin content remained constant within the analytical variations. Traces of sorbitol (0.1%) were detected for the first time in HB and Peter Stuyvesant. 0.4% sorbitol was found in R6. This value is significantly lower than the previously reported values [3].

REFERENCES

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[2] Renaud-J.M., Quarterly Report AQUARIUS, October-December 1988.
[3] Renaud-J.M., Quarterly Report AQUARIUS, July-September 1988.

TABLE 1 : GLYCERIN CONTENT (%) OF GERMAN BRANDS

Brand	Company	July 1987	Dec. 1987	July 1988	Dec. 1988
Marlboro	PM	2.2	2.6	2.2	2.3
HB	BAT	0.4	0.5	0.6	1.7
Camel	RJR	1.8	2.2	2.0	2.2
P. Stuyvesant	REE	n.d.	0.1	0.1	0.1
Lord Extra	MB	0.1	0.1	0.1	0.1
West	REE	n.d.	0.1	0.1	0.1
Ernte 23	REE	0.2	0.1	0.1	0.1
R6	REE	n.d.	0.1	0.1	0.1
Reval	REE	-	-	0.1	0.1

n.d. = not detectable (detection limit 0.1%)

- = not analysed

TABLE 2 : PROPYLENE GLYCOL CONTENT (%) OF GERMAN BRANDS

Brand	Company	July 1987	Dec. 1987	July 1988	Dec. 1988
Marlboro	PM	1.6	1.8	1.6	1.5
HB	BAT	2.4	2.1	2.1	1.8
Camel	RJR	0.7	0.8	0.8	0.6
P. Stuyvesant	REE	1.5	1.4	1.8	1.5
Lord Extra	MB	1.2	1.2	1.6	1.3
West	REE	1.6	1.7	1.8	1.2
Ernte 23	REE	1.5	1.7	1.9	1.5
R6	REE	1.3	1.5	1.8	1.7
Reval	REE	-	-	2.2	2.0

- = not analysed

2021607931

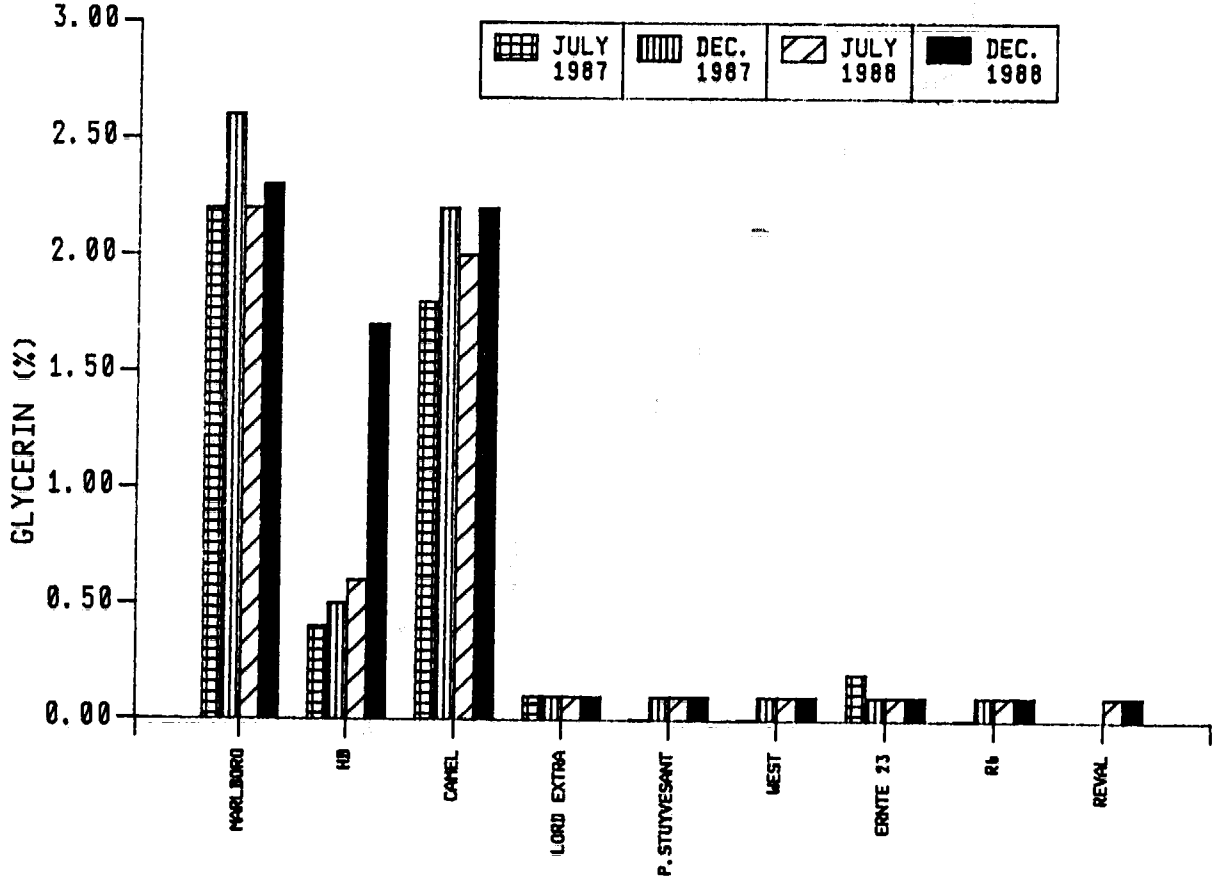
TABLE 3 : SORBITOL CONTENT (%) OF GERMAN BRANDS

Brand	Company	Dec. 1987	July 1988	Dec. 1988
Marlboro	PM	n.d.	n.d.	n.d.
HB	BAT	n.d.	n.d.	0.1
Camel	RJR	-	n.d.	n.d.
P. Stuyvesant	REE	n.d.	n.d.	0.1
Lord Extra	MB	n.d.	n.d.	n.d.
West	REE	0.1	n.d.	n.d.
Ernte 23	REE	n.d.	n.d.	n.d.
R6	REE	1.2	1.0	0.4
Reval	REE	n.d.	n.d.	n.d.

n.d. = detectable (detection limit 0.1%)

- = not analysed

FIG. 1 GLYCERIN CONTENT OF GERMAN BRANDS (1987/88)

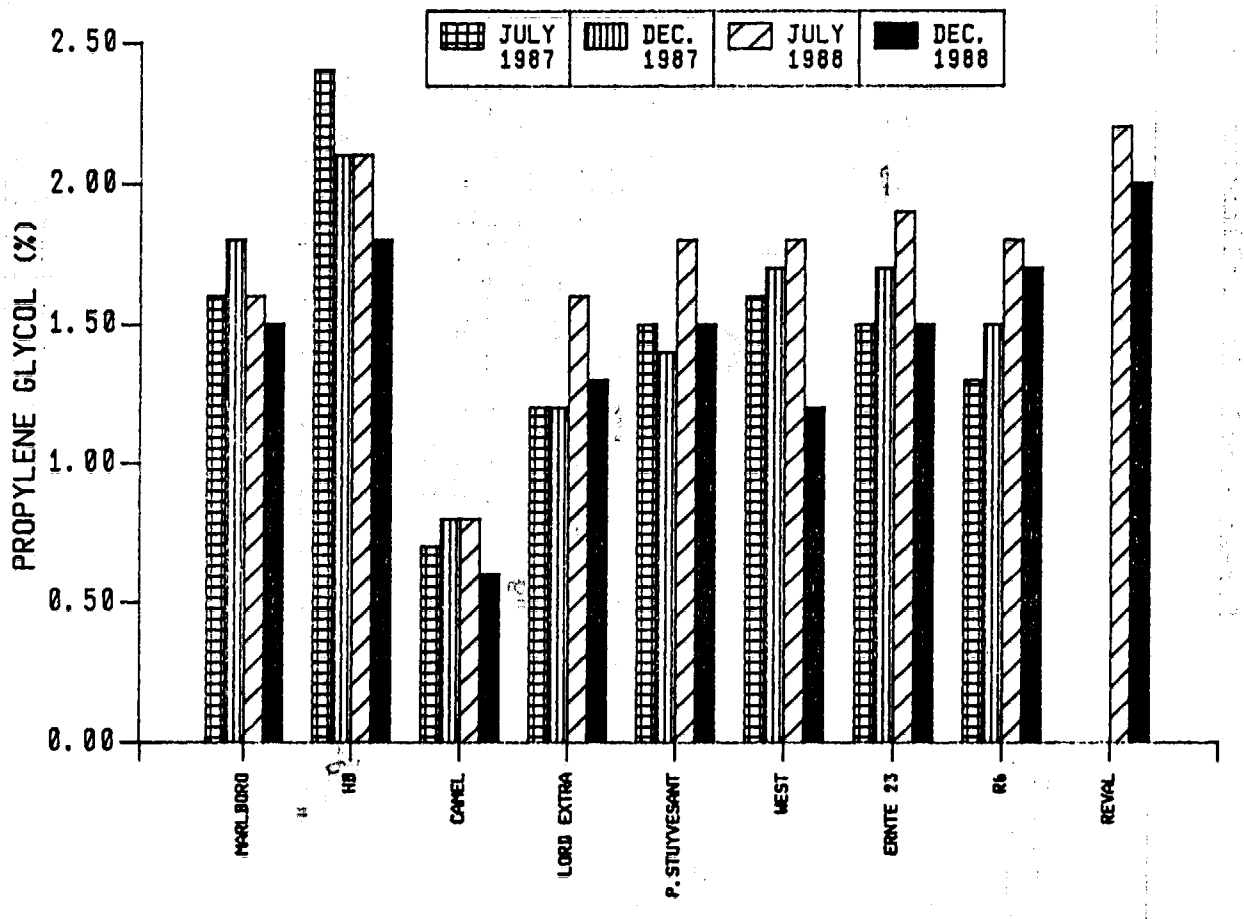


DIVISION : RESEARCH

SUBJECT : ELIT CIGARETTES

AUTHOR : [illegible]

FIG. 2 PROPYLENE GLYCOL CONTENT OF GERMAN BRANDS (1987/88)



2021607934

DIVISION : RESEARCH

SUBJECT TITLE : HYDRA - ETS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Gerber-C. (CAG)

KEYWORDS : ets, rsp. nicotine, volatile-organic, ftr-air-analysis, collaborative-study

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PROJECT HYDRA

Objective

Obtain an analytical data-base on ETS through indoor air monitoring experiments.

Status

Methods

- Benzene, toluene and isoprene analysis : an analytical method aiming at the determination of trace levels of some volatile organic compounds (VOC) in air was tested. The monitored compounds include benzene, toluene and isoprene. The analyses are performed using the thermal desorbtion technique with tenax as a trapping agent. The sensitivity is adequate and the blank levels are below the detection limit. The method remains to be tested for real life samples.

- Equipment : a new data acquisition system was interfaced to the HP 3421 data logger. It is driven by a software allowing treatment of the acquired data in a spreadsheet file.

PROJECT ETS

Objectives

Support S&T in the organization of sub-contracted studies on ETS. Test analytical methods through collaborative studies with external laboratories.

Status

Technical support was given to CHD-Larem in Brussels on ETS sampling and analytical methodologies. Training was provided for some of their personnel.

The last part of the collaborative study organised by RJR in the context of the CORESTA SS/ETS Task Force was completed. It involved the analyses of RSP and nicotine in air using the methods developed for the PASS.

A collaborative study with Battelle Europe was started in order to assess their method for nicotine determination.

SUPPORT TO OTHER GROUPS

The concentrations of nicotine, total particulate matter (TPM), carbon monoxide (CO) and nitrogen oxides (NO, NO_2, NO_x) were determined in the exhaust gases of the smoking machine hoods. A report was issued [1].

The requested air analyses at some work-places in Onnens were completed and a report was issued [2].

The CO and NO_x concentrations in the air from the expansion tower in Onnens were analysed to investigate the possible leak of combustion gases from the main heat exchanger in the ETNA line. A report was issued [3].

Air samplings were performed in Serrières to monitor the air concentration of methyl ethyl ketone around cigarette makers using ink-jet printing. A memo was sent to A. Kaspar [4].

PLANS

The collaborative study with Battelle Europe will be continued.

The supercritical fluid chromatograph will be modified in order to perform splitless injections with solvent backflushing.

Work will be continued on the determination of trace amounts of VOC in the indoor air.

2021607936

REFERENCES

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[2] Memo from Gerber-C. to Kaspar-A., Suite de l'analyse de poussière à Onnens, February 14, 1989.

[3] Memo from Gerber-C. to Bruni-H., Analyes de CO et NO_x dans l'air sortant d'une fuite, February 17, 1989.

[4] Memo from Gerber-C. to Kaspar-A., Résultats d'analyse de méthyl éthyl cétone (MEK) à la production, February 3, 1989.

C. Gerber

DIVISION : RESEARCH

SUBJECT TITLE : NEAR INFRARED REFLECTANCE ANALYSES (NIRA)

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Moser-F. (FMO)

KEYWORDS : infraAlyzer, nira, flavor

OBJECTIVE

To evaluate Near Infrared Reflectance Analysis (NIRA) as an analytical approach towards routine quality and/or process control measurements.

STATUS

The development of the InfraAlyzer method for the determination of main components ethanol, water, fructose and glucose in MF-AC base flavor has been finished [1]. A description of the method was prepared and will be issued [2].

PLANS

Methods to check the composition of flavors before application and to differentiate between "application flavors" used for various brands will be developed.

REFERENCES

[1] Moser-F., Quarterly Report NIRA, October-December 1988.
[2] Moser-F., PME Analytical Method "Determination of main components in liquid flavors using Near Infrared Reflectance: Determination of ethanol, water, fructose and glucose in after-cut base flavor (MF-AC base)".

DIVISION	:	RESEARCH
SUBJECT TITLE	:	ORDER
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Murray-M. (MUM), Moser-E. (EVM)
KEYWORDS	:	regulation, db, flavor, preservative, analysis, compliance

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OBJECTIVE

To ensure that PM produced materials and products comply with the requirements of the German Food Law.

STATUS

Thirteen flavor samples, 9 reconstituted tobaccos and 2 Cochise samples were analysed for the 6th sample series of project ORDER. The results were reported to QA-PMG. Analytical methods used by QA-Richmond for flavor analysis are being examined for equivalence.

EM Moser

DIVISION	:	RESEARCH
SUBJECT TITLE	:	PACK
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Lauper-G. (GLA)
KEYWORDS	:	pack, label, cardboard, profile, ink, solvent, volatile, flavor, odor, organoleptic, sniffing, packaging, headspace, quality

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OBJECTIVE

To determine which substances in packaging materials adversely influence cigarette taste, and establish maximum acceptance levels.

RESULTS

Project PACK was presented to PM printers during 2 meetings held at R&D Neuchâtel. Proposed tolerances were discussed with the printers and training given on the PM Headspace-GC method (Carlo Erba) for residual printing solvents.

The PM Headspace-GC method is being tested with the HS-101 Perkin Elmer instrument. In order to obtain similar results to those of the Carlo Erba instruments, the HS-GC conditions may need modification.

PLANS

- To complete project PACK report.
- Assist printers with method start up.

G. Lauper

2021607940

DIVISION : RESEARCH

SUBJECT TITLE : SS-REDUCTION

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Pestlin-S. (SAP)

KEYWORDS : single-wrapper, double-wrapper, ss-yield, high-citrate, low-porosity, high-porosity, self-extinguishing, low-static-burning-rate, calypso

OBJECTIVE

To investigate the possibilities of reducing SS yields by varying the wrapper and its physical properties and/or varying the physical properties and appearance of cigarette prototypes (project CALYPSO).

RESULTS

In collaboration with Product Development PME, ten prototypes were produced, having the same blend and construction as the MLK, but various wrappers. Six of the prototypes had a single wrapper, the other four were produced in a double wrapped version. The single wrappers were WP60, low static burning rate (LSBR), self extinguishing (SE), high citrate, high porosity or low porosity paper.
The double wrapper consisted of WP60 and SE or WP60 and LSBR cigarette paper. In order to check the influence of the sequence of paper on sidestream smoke yields, WP60 was used as the inner or outer wrapper, while the LSBR and SE papers were the outer or inner liner, respectively.
The prototypes investigated are listed below.

Prototype	Wrapper		Supplier
	inner	outer	
01P	WP60		Wattens
02P	LSBR (535-26P)		Mauduit
03P	SE (535-17P)		Mauduit
04P	LSBR	WP60	
05P	SE	WP60	
06P	WP60	LSBR	
07P	WP60	SE	
08P	high citrate (110-6 2.5 HFE)		Mauduit
09P	low porosity (VLB 10 S1)		Mauduit
10P	high porosity (5220 C VERGE)		Mauduit

2021607941

So far particulate matter (PM) was determined, using a Tapered-Element-Oscillating-Microbalance (TEOM). For this, 5 cigarettes of each prototype were smoked. Results are summarized in Table 1.

TABLE 1 : Puff number and sidestream smoke particulate matter (PM) values of prototypes cigarettes

Prototype	Puff number	PM (mg/puff)
01P	8.7	2.75
02P	11.7	2.13
03P	13.6	1.40
04P	9.9	2.58
05P	10.2	2.31
06P	10.2	2.22
07P	10.3	1.65
08P	8.0	2.51
09P	10.2	2.04
10P	9.1	2.62

Compared with the values of prototype 01P, reductions of 50% and 20% were obtained when using the SE and LSBR paper respectively. The double wrapped versions gave, in general, higher values than the corresponding single wrapped prototypes. The prototypes, however, having WP60 as the inner wrapper gave again lower values than those having WP60 as the outer wrapper. A 25% reduction of PM was found with the low porosity paper which was the most effective compared to the three other papers.

PLANS

In order to continue the sidestream smoke analyses of the ten prototypes, CO, CO2, NO, nicotine, TSNA, VNA, aldehydes, HCN and NH3 will be determined.

S. Peschi

2021607942

DIVISION : RESEARCH

SUBJECT TITLE : ANALYTICAL INVESTIGATIONS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Murray-M. (MUM), Genoud-Y. (YVG), Lauper-G. (GLA), Moor-Ph. (PHM), Renaud-J.M. (JMR), Moser-E. (EVM)

KEYWORDS : label, profile, board, carton, tip, bundle, solvent, coating, off-taste, gravure, offset, varnish, migration, volatile, taste, foil, saccharin, valeric, deg, gb, ch, db, ic, hu, cj, yu

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PACKAGING ANALYSIS

Filters from Raffles cigarettes packed in 4 different boards were analysed for residual printing solvents. Filters from cigarettes packed in new boards had higher acetate ester concentrations than those packed in the Invercote R standard [1,2] (GLA).

A water-based varnish was introduced for the bundle paper of PM Filter Kings (Gold). Analysis of filters from cigarettes packed in water-based or nitrocellulose-based varnished bundle paper showed acceptable residual solvent levels [3,4] (GLA). Analysis of samples packed with an earlier version of the bundle paper showed high residual solvent levels after 14 weeks storage time [5,6] (GLA).

Raffles blanks printed with a new ink system were within overall solvent tolerances but contained some unusual solvents [7] (GLA).

Analysis of Chesterfield HL blanks ex Graphia showed the samples were within PM tolerances [8,9] (GLA).

MLF HL blanks produced with a new latex were found to be within tolerances for residual solvent levels [10,11] (GLA).

The pigment application system of the board machine at Feldmühle was adjusted to give a more even top surface. Analysis showed the new system retained more ethanol but all samples were within tolerances [12,13] (GLA).

L+M blanks produced by Kner Nyomda Hungary were analysed. The samples were printed in offset and had a strong odor. Refusal was recommended [14,15,16] (GLA).

2021607943

A number of samples were examined for compliance with PM tolerances for residual solvents after changing from water-based to nitrocellulose-based varnishes. HL Marlboro blanks from Litografia Romero Teneriffe had reduced solvent levels with water-based varnish. Chesterfield bundle paper had similar low residual solvent levels with both water-based and nitrocellulose-based varnishes [17,18] (GLA).

HL Marlboro blanks ex Laupen were within PM tolerances [19] (GLA).

Gold inks used to package Marlboro Lights at Berlin were analysed. One sample contained a large amount of isobutyl-methacrylate. Sensory evaluation of packed cigarettes was recommended [20,21] (GLA).

Cigarettes packed using standard and new latex coated boards from Iggesund were analysed. Approval of the new material was recommended [22,23] (GLA).

Filters from cigarettes packed in two boards from Cosmocart were compared with an Iggesund packed standard. The latest Cosmocart board had the lowest residual solvent levels of the three samples. Further testing was recommended [24,25] (GLA).

A new water-based varnish from Sicpa was compared with a standard product. The new varnish had a lower residual solvent and a different solvent mixture [26,27] (GLA).

IVORY COAST TASTE DEVIATIONS

A taste defect was detected by panel testing on samples from production week 43. Comparison of these samples with other satisfactory weeks showed the cigarettes were contaminated. Further investigation was recommended [28,29] (GLA).

DEG - ET

At the request of QA-PME the presence of DEG on an ET sample was confirmed by GC-MS [30,31] (PHM).

DEG BOND STREET

At the request of Leaf Department PM-EEMA the presence of DEG on foil, Dec. 1988 and Jan. 1989 production, was confirmed by GC-MS [32,33,34] (PHM).

SACCHARIN RAFFLES

QA-Silvertown requested the analysis of saccharin on Raffles stock stored pending settlement of an insurance claim since 1986. 34 samples were analysed and results reported [35,36,37] (EVM).

SOLVENT

A solvent used to degrease cigarette makers in Ivory Coast was found to be 45% toluene + 55% dichloromethane. Use of another solvent was suggested [38] (PHM).

INNERFOIL CONTAMINATION SILVERTOWN

An off-taste was detected by the smoking panel at Silvertown and aluminium innerfoil with a suspect odor was blocked. Analysis showed the presence of mesityl oxide and other solvents in high concentration on the suspect material. A change in the printing solvent system used was suspected [39,40,41] (GLA/PHM).

PROJECT EUROP

32 samples were analysed for isovaleric acid in the support of Project EUROP [42] (YVG).

SERVICES FOR OTHER GROUPS

Puff by puff smoking

During the period covered, 30 puff by puff smoking runs have been performed for Product Development [43,44,45] and Product Research [46]. Experiments are under way in order to get comparable results between DPM obtained by spectrophotometry and ISO method.

Two parameters have been found to have a major influence on the values obtained, i.e. wavelength of measurement and type of blend. According to [47] absorbance measurement at 310 nm reduced the difference between ISO and spectrophotometric results. Due to difference in UV spectra of DPM extracts from different fillers, specific calibration curves must be established for each type of blend (JMR).

CF analyses

At the request of QA, 26 samples of Camel and Winston from 12 European countries have been analysed for CF in filler [48]. CF was found only in Camel-CH and Winston-CH with values ranging from 23 to 33 ppm, and in Winston-SW, 5 ppm (JMR).

Static burning

At the request of Product Development, 9 determinations of static burning rate have been performed for projects CHISEL [49] and DETECTIVE [50] (JMR).

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[4] Memo from Lauper-G. to Gabler-E., January 11, 1989.
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[10] Memo from Lutzig-B. to Lauper-G., January 19, 1989.
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[39] Memo from Salmon-B. to Murray-M., March 22, 1989.
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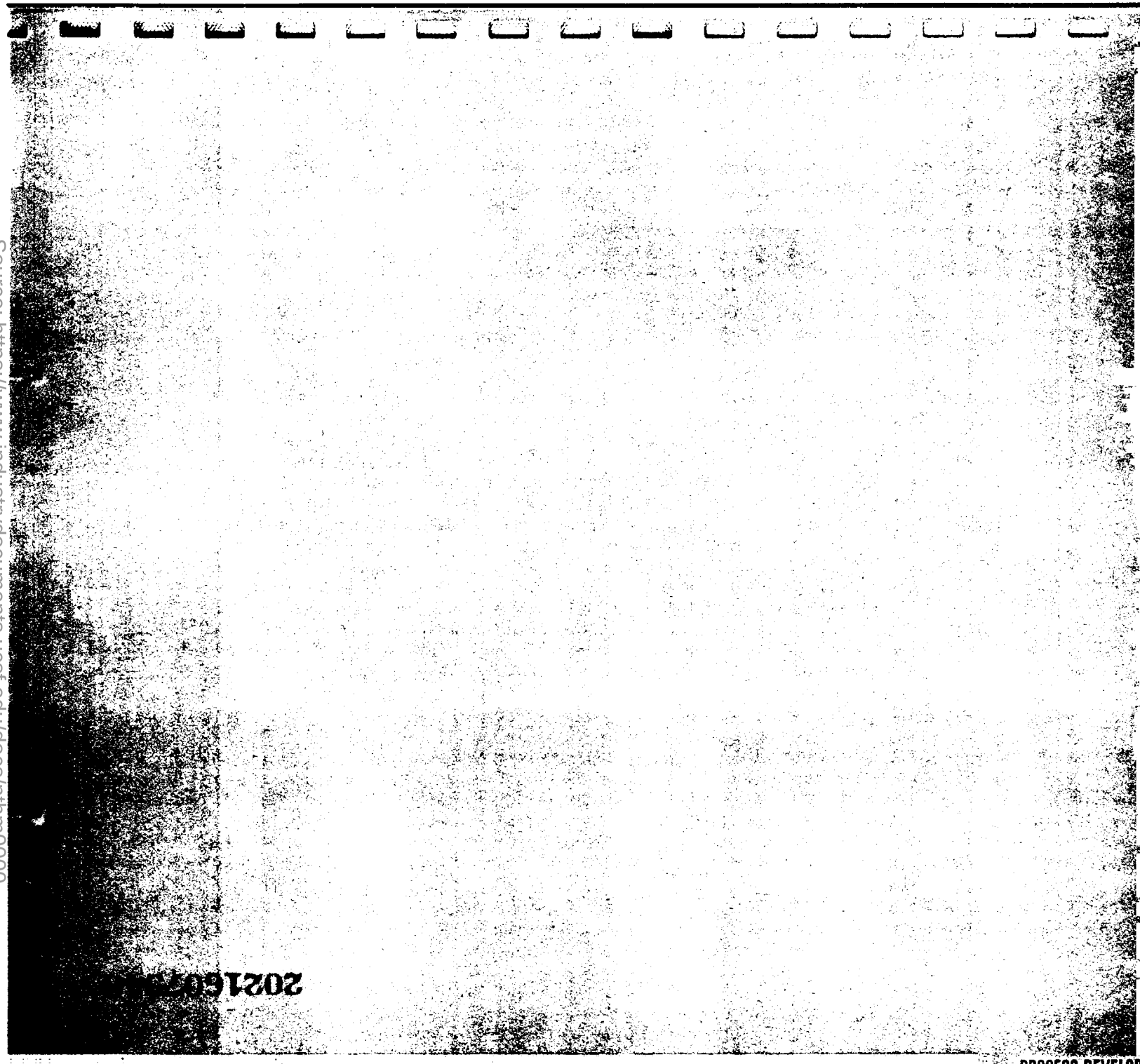

PROCESS DEVELOPMENT

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : ADMOIST

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Lüthi-N. (NIL)

KEYWORDS : admoist, dickinson, reordering, et, onnens, ftr, fcf, expanded, tobacco

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OBJECTIVES

Assistance to FTR Engineering and Onnens Operations for the evaluation of a Dickinson Admoist conditioning system for the reordering of expanded tobacco.

STATUS

As reported earlier, two series of trials for the reordering of expanded tobacco with the Dickinson ADMOIST conditioning system were carried out in December 1988 by Onnens Operations (1). A special report on these trials was issued by the ET process engineer in Onnens (2). The results showed lower cylinder volume figures and higher chemical losses than the standard reordered ET. During these trials, steam and/or a combination of steam and water was applied for the reordering of the ET. This procedure is similar to stem conditioning for which the unit was originally conceived.

An additional series of trials were carried out on March 6 and 7, spraying only water at ambient temperature. The results were promising, but at the request of Dickinson the unit had to be sent back to the supplier on March 10; consequently no further follow-up could be undertaken.

The FTR Process Engineer in Onnens will establish a special report summarizing all results.

PLANS

PM-Richmond R&D will carry out some follow-up trials on their Admoist unit, as discussed with Mr. Don Knudson.

REFERENCES

(1) Lüthi-N., Quarterly Report, October-December 1988, p. 64

(2) Dufour-P., Report "Essais de réhumidification de tabac expansé avec le tambour Dickinson", January 12, 1989

NIL/cav/April 20, 1989
qr189admonil

2021607950

RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION	:	PROCESS DEVELOPMENT
SUBJECT TITLE	:	DEGAS
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Borgognon-D. (DIB)
KEYWORDS	:	degas, us, burley, fc, br

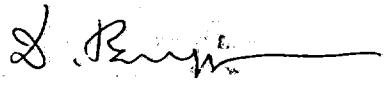
OBJECTIVES

The aim of this project is to evaluate the influence of strip package OV on US-Burley strip size.

STATUS

The analytical work and the evaluation of the results were completed. A presentation of the results was given to the Leaf Department on March 21.

The final report has been completed; its conclusion will be discussed with a representative of the Leaf Department before it is issued. A summary will be given in the next quarterly report.



DIB/cav/April 10, 1989
qr189degadib

2021607951

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : DELACROIX

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Pulfer-P. (PEP)

KEYWORDS : delacroix, amf, legg, annular, dryer, qualification, run, pmg, munich

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OBJECTIVES

Give assistance for the start-up of the AMF-LEGG annular dryer in PMG-Munich.

STATUS

Two visits were made to PMG-Munich to attend the qualification runs for both the German and the Pan-European Marlboro blends (ML061 and ML010) in weeks 9 and 10.

No major problems occurred during the trial runs with a normal production batch size of 6'000 kg each. Further fine tuning will have to be made regarding dryer controls, to be able to run in automatic mode and to reduce off-specs. tobacco during start-up.

Cigarettes were made with the cut fillers from both blends the day after drying, and later subjectively evaluated by Panel A with positive results.

To date, all other Marlboro and L&M brands, in addition to PM021, have been produced using the new AMF-LEGG dryer with PM010 to be qualified next. Current indications for 14 batches of ML010 have shown improved sieve, CCV and firmness trends.

REFERENCES

(1) Strobel-U., Qualifikation des neuen Schnittabaktrockners Werk München, January 12, 1989

(2) Strobel-U., to Schmidt-K., Qualifikation des AMF-LEGG Trockners - neues Timing, February 27, 1989

(3) Strobel-U., to Wood-C., Results of the new LEGG dryer regarding the ML010, April 13, 1989

PEP/cav/April 20, 1989
qr189delapep

P. Pulfer

2021607952

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : GENERAL TECHNOLOGY

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Frattolillo-A. (ANF)

KEYWORDS : papastratos, general, technology

OBJECTIVES

1. To compare the physical behaviour of HAUNI stems (HS) having undergone the rotary dryer to that of HAUNI stems (HS) having undergone the fluidized bed dryer and their influence on the quality of the final Marlboro filler.

2. To evaluate the impact of 10% ET inclusion and the reduction of B-stem to 4.75% from the current 9%.

STATUS

The following tobaccos received ex PAPASTRATOS were evaluated :

A - HAUNI stems having undergone the rotary dryer

B - HAUNI stems having undergone the fluidized bed dryer

C - Marlboro filler incorporating 9% of A-stems

D - Marlboro filler incorporating 9% of B-stems

E - Marlboro filler "New Blend Concept" incorporating 4.75% of B-stems and 10% ET.

COMMENTS

The analyses were performed on cut fillers and processed stems without corresponding cigarette samples.

It is recommended that the results be confirmed with finished cigarettes to determine their impact on finished product quality, i.e. sieve, CCV, firmness and equilibrated OV.

In view of the unusual sieve results it should be confirmed that samples are taken at common drop points and are not hand grab samples.

STEMS

- In general, HAUNI stems with fluidized bed dryer (B) showed improved 6 mesh and CCV.
- The "as is" OV in A-stems was 11.46% which is about 2% lower than normal targets (13.0 - 13.5%).
- The B-stems equilibrated at a higher OV (14.5%).
- The B-stems showed about 16% more on the 6 mesh screen (33.38% versus 17.60%).
- The percent on 35 + Pan showed no difference between A- and B-stems. However 35 + Pan was only 0.15% as compared to 6% for PMH-BOZ HAUNI stems. This would indicate process screening to remove fines or a hand sample versus fall sample.
- The CCV of B-stems showed a significant improvement of 0.42 cc/g or 6.5% more filling power, compared to that of A-stems (6.82 versus 6.40 cc/g).
- As a result of the higher % on 6 mesh, an improved SSI of 4.77 units was apparent in B-stems.

TOBACCO FILLER

- In general, the blend with 10% ET and 4.75% B-stems showed improved CCV, higher equilibrated OV and reduced 6 mesh sieve size.
- The cut filler data on filler with rotary dryer stems versus fluidized bed dryer showed no significant difference in sieve size, CCV or equilibrated OV.
- The "as is" OV was the lowest in E-filler (12.74%).
- The equilibrated OV was the highest in E-filler, followed by D-filler, and the lowest in C-filler.
- C-tobacco filler showed about 1% more on 6 mesh than D-filler (not significant) compared to E-filler.
- The fraction 35 + Pan (fines) showed a 1% increase in D-filler and almost 1.5% increase in E-filler, compared to C-filler. Overall, all the samples were within the normal expected range of 35 + Pan.
- No significant difference in CCV between C- and D-fillers.
- E-tobacco filler with 10% ET and 4.75% B-stems showed a 0.3 cc/g improvement or 5% increase in filling power as compared to D-filler.

PLANS

- Follow-up trip for familiarization with the Papastratos primary in week 17.

- HQ Operations to discuss modified blend concept for Marlboro Greece.

ANF/cav/April 14, 1989
qr189gtanf

2021607955

A P P E N D I X

		HAUNI stems + rotary dryer			HAUNI stems + fluid. bed dryer			ML filler + 9% A-stems			ML filler + 9% B-stems			ML filler New Blend Concept 10% ET + 4.75% B-stems		
Type of tobacco and "Code"		A			B			C			D			E		
Quality Parameters		n	$\bar{x}$	s	n	$\bar{x}$	s	n	$\bar{x}$	s	n	$\bar{x}$	s	n	$\bar{x}$	s
"As is" OV	%	2	11.46	0.04	2	13.08	0.06	2	13.24	0.00	2	13.23	0.11	2	12.74	0.12
6 mesh	% ON	5	17.60	0.67	5	33.38	0.69	5	33.84	2.74	5	32.92	5.45	5	28.48	4.84
35 + Pan	% ON	5	0.16	0.06	5	0.13	0.05	5	5.84	0.47	5	6.85	1.55	5	7.29	0.31
Equilibrium moisture	%	5	14.17	0.09	5	14.52	0.06	5	14.74	0.42	5	14.88	0.33	5	15.43	0.47
CCV	cc/g	5	6.40	0.03	5	6.82	0.05	5	5.71	0.13	5	5.66	0.06	5	5.96	0.03
SSI *		5	76.93	0.19	5	81.70	0.27	5	74.11	1.01	5	73.02	3.14	5	70.73	1.95

* Sieve Size Index : Higher value indicates better overall sieve size

ANF/cav/April 14, 1989
qr189gtanf

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : MINIPRIMARY

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Borgognon-D. (DIB)

KEYWORDS : miniprimary, equipment, vinci, heinen

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1. EQUIPMENT (Project VINCI)

OBJECTIVES

The aim of this project is to increase the capacity of the Miniprimary and improve flexibility as well as the quality of the cut filler while maintaining the desired subjective characteristics.

STATUS

During the reporting period four special MLK laydowns were processed in the Miniprimary with the aim of improving operational flexibility (Trial 1) and capacity (Trials 2 and 4) :

Trial 1

In case an urgent batch including Burley treatment should be requested when two operators were absent, this trial was run by two operators with the extra help of a non-qualified person during the critical operations really needing three operators. It was carried out in two days. The processing was interrupted after the Burley treatment and the treated Burley was stored overnight.

Trials 2 - 4

In order to increase the capacity of the Miniprimary without working a two-shift operation, an attempt was made to run three batches including Burley treatment in two days with four operators, instead of one batch per day with three operators.

- Trial 2

  The standard Miniprimary procedure was applied for this ML022 batch (Miniprimary reference).

- Trial 3

In order to run three batches including Burley treatment in two working days, the processing of one batch must be interrupted overnight at a convenient step. As the storing of treated Burley overnight was not accepted subjectively (1), it was decided to reverse the program of work for this trial and start with Orient and FC treatment instead of Burley treatment. The Orient and FC were therefore stored overnight after application of the PC solution.

- Trial 4

The standard Miniprimary procedure was also applied for this ML022 batch, except that the process was interrupted before drying for technical reasons. This meant that the tobacco was kept overnight at 20% OV before drying, add-back and AC application.

Some relevant parameters of the four MLK cigarettes produced from these batches are shown in the appendix. Prototype 012p was produced with FTR ML022 cut filler (control).

COMMENTS

The cigarette results do not show relevant trends, except for the firmness results which are abnormally low. Other measurements were performed in the Process Development laboratory which confirmed these results.

TASTE EVALUATION

On March 10, 1989, the cigarettes were evaluated by Panel A in Lausanne (2). The panelists found that :

- cigarette 010p produced from Trial 3 was somewhat aggressive and sharp, not acceptable,

- cigarette 011p produced from Trial 4 was in line with the reference 009p produced from Trial 2,

- cigarette 008p produced from Trial 1 was different to the reference 009p. As such not negative, but the difference is significant. Therefore it is not recommended to produce 008p (Trial 1).

CONCLUSION

It has been demonstrated that three batches including Burley treatment can be processed during two working days without overtime. There were no problems concerning the operational procedures and the physical parameters of the filler produced. No further tests are planned for the time being.

2. OPERATIONS

The following batches were processed through the Miniprimary during the reporting period (61 working days) :

	61 working days (Jan.-Mar.1989)	63 working days (same period 1988 for comparison)
For Product Development :	37	42
For Process Development :	16	9
For Quality Assurance :	8	4
For Research :	5	0
	66	55

3. REFERENCES

(1) Borgognon-D., Quarterly Report, October-December 1988, p. 77

(2) De Borst-E., Taste Evaluation, March 10, 1989

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qr189minidib

APPENDIX

Miniprimary Batch No.		1531 (Trial 1)	1554 (Trial 2) M-P control	1555 (Trial 3)	1556 (Trial 4)	FTR Control
Cigarette prototype		008 p	009 p	010 p	011 p	012 p
Cigarette						
Total weight	mg/cig	995	1006	1014	1006	1011
Tob. weight at 12.5% OV	mg/cig	764	778	782	773	777
Corr. firmness at 12.5% OV	mm	2.48	2.48	2.38	2.42	2.50
Cigarette RTD	mm H_2O	104	104	110	109	108
Dilution	%	17	17	14	13	12
Filler						
Total alkaloids	%	1.80	1.76	1.78	1.75	1.71
Reducing sugars	%	8.4	7.9	8.3	8.2	8.7
Nitrate-nitrogen	%	0.21	0.21	0.21	0.22	0.21
Smoke						
Tar	mg/cig	15.8	15.5	16.2	16.4	16.4
SN	mg/cig	1.08	1.05	1.07	1.14	1.09
CO	mg/cig	14.4	15.3	15.8	16.1	16.2
NO	mg/cig	0.23	0.25	0.25	0.26	0.27
Puff count	n/cig	9.5	9.5	9.5	9.7	9.4

DIB/cav/April 10, 1989
qr189minidib

DIVISION : PROCESS DEVELOPMENT
SUBJECT TITLE : PICASSO
PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Lüthi-N. (NIL)

KEYWORDS : picasso, tmci, recon, tobacco, sheet, rcb, monique, es, ch, trial, tarragona, asta, hosokawa, micropul, db, grinding

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OBJECTIVES

The aim of this project is to create an in-house capability for TMCI, a reconstituted tobacco process using a different slurry system to that of RCB, as requested by TTG Richmond. The RCB/ Monique sheet line in Onnens appeared suitable for attaining this objective. The project was implemented and now allows for process and product development trials and production of sheet materials using TMCI technology with various binder systems for limited periods of time.

It also involves our assistance, together with PM Richmond, to Tabacalera SA in Spain for sheet development and the start-up of TMCI installations in Tarragona and Cadiz using the PM binder system.

STATUS

Assistance was given to R&D Richmond during a two week trial program for the production of a TMCI-type sheet defined as "ASTA", using the PM binder system in a TMCI installation at Tabacalera SA in Tarragona, Spain (1).

The trials were run in January and the objective was to define the degree of fineness of ground tobacco necessary to produce a uniform tobacco sheet (2). Four different tobacco grindings were evaluated :

1. Standard ground in Tarragona - 100% < 60 mesh (ASTA-33)
2. Ground tobacco - 95% < 400 mesh (ASTA-34)
3. Ground tobacco - 95% < 200 mesh (ASTA-35)
4. Ground tobacco - 95% < 120 mesh (ASTA-36)

The first week of operation was devoted to familiarizing the operators with the control and operation of the plant by team members of PM, TMCI and Tabacalera. The second week was devoted to the production of ASTA product for evaluation of the survivability of the test products in USA.

Many process equipment problems were encountered which made process control difficult. TMCI have been made aware of these problems and have agreed to correct them.

Based on visual assessment of sheet formation and sheet quality, all three "fine" grindings are acceptable feedstocks for this process. Even when using the "coarsest" of the fine ground materials (95% 120 mesh), an acceptable uniform sheet product was obtained.

However, this sheet was made from a slurry of only 17.2% total solids (planned 21%). A higher solids content was attempted but changes in tobacco feedrate did not effect a change in slurry solids. A reduction in slurry solids from 21% to 17.2% increases the drying load by 29%. Although ASTA-36 was a satisfactory sheet, it may not be possible to produce such a sheet at 21% slurry solids using 120 mesh dust. The use of a finer dust, which reduces slurry viscosity, may be necessary to produce sheet similar in appearance to ASTA-36 from 21% slurry solids.

For further confirmation of the acceptability of this range of particle size for the feedstock, the different finished products were shipped to Richmond for evaluation.

The final report on the ASTA trials in Onnens using finely ground feedstock is in preparation.

REFERENCES

(1) Knudson-D., memo to Fernandez-J., "Tarragona ASTA trials", October 10, 1988

(2) Gellatly-G., memo to Knudson-D., "Tarragona trials to optimize the tobacco grind for ASTA processing", February 7, 1989

NIL/cav/April 24, 1989
qr189picanil

2021607962

DIVISION	:	PROCESS DEVELOPMENT
SUBJECT TITLE	:	PISSARRO
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Lüthi-N. (NIL)
KEYWORDS	:	pissarro, expansion, run, et, berlin, it, mti, fc, tobacco, br

OBJECTIVES

This project was implemented to carry out expansion runs in the ET installation at PMG-Berlin for MTI (Italian Monopoly), using 100% flue-cured tobacco delivered by MTI. It also involves our assistance to MTI for the installation and start-up of an ET plant in Bologna.

STATUS

During the period January to February 1989, five additional laydowns (runs Nos. 1-5) of 10'000 kg each were processed and expanded in the Berlin primary.

These were the last runs in Berlin, as it was decided by PM Operations to carry out any further expansion runs for MTI in Munich. Already in March, the first runs were carried out in Munich. Five laydowns of 7'000 kg each of MTI tobacco were processed and expanded in the Munich primary.

A status report covering the period up to the end of December 1988 and containing physical and chemical results of the runs was issued by the undersigned (1).

REFERENCE

(1) Lüthi-N., report to Trento-A., "Project PISSARRO, expansion runs 16-19 for MTI in PMG-Berlin", Feb. 10, 1989

NIL/cav/April 24, 1989
qr189pissnil

2021607963

DIVISION	:	PROCESS DEVELOPMENT
SUBJECT TITLE	:	RACOON
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Lüthi-N. (NIL)
KEYWORDS	:	racoon, tobacco, blend, maa, expansion, et, ch, bur, fc, ml

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OBJECTIVES

This project is carried out in the context of the Muratti Ambassador taste improvement program.

STATUS

In the context of this project, an expansion run of 2'000 kg was carried out in March in the FTR ETNA installation in Onnens.

The tobacco for this trial, consisting of 10% Burley, 78% Virginia and 12% Maryland, was processed (conditioned, cased and cut) on March 14, 1989, in the FTR Primary and expanded the next day in Onnens. No special problems were encountered during the running of the trial.

A trial report will be issued jointly by the ET Process Engineer and the undersigned.

The necessary follow-up with the expanded tobacco will be carried out by the Product Development group.

U. Lüthi

NIL/cav/April 24, 1989
qr189raconil

2021607964

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : RUBENS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Borgognon-D. (DIB)

KEYWORDS : rubens, erni, fc, mw, ks, br

OBJECTIVES

This project is carried out at the request of the Leaf Department as a follow-up of the FC-Brazil and Korea studies conducted in 1986 and 1987. Malawian FC and Burley tobaccos of equivalent grades are used. The project is divided into two parts for both FC and Burley :

1. Part One

   This study was initiated in order to collect information on the physical and chemical properties of hand-stripped versus machine-threshed Korean flue-cured tobacco, to relate cut tiller quality to strip size and to evaluate the corresponding TLA-type cigarettes.

2. Part Two

   The second part was organized to consider the influence of package OV and compression (density) on tobacco strip size and cut filler size. In order to conserve the OV, tobacco was packed with poly-liners in its country of origin.

STATUS

Twenty different lots (10 FC and 10 Burley) were received in Onnens in week 2, 1989. On January 13, the tobacco was visually inspected by a representative of the Leaf Department. Samples were taken for OV measurements and TLA analyses.

During the reporting period, the project has progressed as follows :

- 13 batches of the 40 were treated in the Miniprimary,

- cigarette prototypes were made for 10 batches,

- all the analytical work such as sieve tests for strips and cut filler, weight selection and firmness measurements was completed for 7 batches.

DIB/cav/April 10, 1989
qr189rubedib

DIVISION : PROCESS DEVELOPMENT
SUBJECT TITLE : TOBACCO PROCESS QUALITY (GIOTTO)

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Frattolillo-A. (ANF), Wood-C. (CWO)

KEYWORDS : tobacco, process, quality, giotto, pme

OBJECTIVES

- To provide tobacco quality comparisons between PME affiliates from the process point of pre-conditioning to the cigarette finished product.

  The program compares Pan-European and German Marlboro tobacco processes and will show the impact of individual unit processes upon tobacco quality in terms of sieve analysis, filling power, moisture control, and other quality parameters.

  These results will be used to evaluate process quality via standard procedures and common sampling points in a standardized reporting format to facilitate comparative analysis.

- To improve overall tobacco processing by optimizing tobacco process quality and reducing degradation and losses, thereby optimizing cigarette quality and maximizing yield.

STATUS

- An update presentation was given to Headquarters Operations on March 20, 1989 and to the Managing Directors of PMG and PMH on March 22 in BOZ.

- The fourth quarter 1988 report with comparative factory profiles was issued. These results were reviewed in Munich in week 10 with primary representatives from Berlin, BOZ and FTR also attending (2). A 1987 versus 1988 comparison was also presented and reviewed. This was a separate report issued in February 1989.

  Strip size reporting within the context of GIOTTO was also discussed and will be included in draft form in the first quarter 1989 report for further comments and recommendations.

- In February 1989, a protocol for sampling of strip tobacco and cut tobacco for GIOTTO data collection and reporting was issued, following a review in Munich and Berlin in week 3 and in BOZ in week 4.

- In conjunction with the R&D Computer Support Group, a timetable for direct computer transmission of data to R&D from each affiliate is under study and a format is being reviewed for application to the PROFS systems.

PLANS

- Develop, in conjunction with affiliate locations, a method to analyse statistically the GIOTTO data and identify significant trends or differences within each factory and between locations.

  A preliminary data analysis concept has been developed by the University of Neuchâtel for consideration and potentials for application to GIOTTO data are being reviewed within R&D. It is intended to review these concepts with the affiliate "users" following review within R&D of all the various methods of applying these statistical concepts in order to maximize their potential benefits in a practical manner.

- On a routine basis, evaluate process and cigarette quality results in relation to modifications, to tobacco processing, equipment changes, blend changes, capacity and flow rates, measurement methodology and process specifications.

- Based on consistent tobacco process quality improvements in combination with quality audit results, make recommendations in regard to process improvements, process specifications, and finished product weight and firmness objectives.

REFERENCES

(1) - Regional Primary Optimization Program, Update and Presentation, March 20, 1989

(2) - Tobacco Process Quality Program, GIOTTO, Factory and Comparative Profiles, 4th quarter 1988

(3) - Tobacco Process Quality Program, GIOTTO, Factory and Comparative Profiles, Annual Report 1988

(4) - Supplement to GIOTTO Annual Report 1988, Averages and Differences

ANF/CWO/cav/April 20, 1989
qr189tpqanf

DIVISION : PROCESS DEVELOPMENT
SUBJECT TITLE : TURNER
PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Frattolillo-A. (ANF), Wood-C. (CWO)

KEYWORDS : turner, burley, p&s, capacity, drying

OBJECTIVES

Assist PMH in achieving an increase in Burley production capacity to meet the forecasted requirements and provide adequate maintenance and cleaning time within the three shift primary operations.

Give technical support within the scope of achieving the increased throughput while maintaining current quality and subjective standards at a minimum of 1'700 kg per dryer per hour, up from 1'450 kg/h standard for each dryer.

STATUS

Confirmation and new US profiles were conducted during week 35 in BOZ with the following formats :

Test	Flow/Dryer	Tunnels	Concentrated Spray	Temp. Profile
1.	1'700 kg/h	yes	123 lt/1000	85-95-85 °C
2.	1'700 kg/h	yes	130 lt/1000	90-95-90 °C
3.	1'700 kg/h	yes	normal	100-100-85 °C
Control	1'450 kg/h	no	normal	100-100-85 °C

Panel A evaluated these trials on September 29 and expressed a clear preference for test No. 1 or the standard US drying profile of 85 - 95 - 85 °C.

A full industrial trial to confirm these results was recommended by Panel A prior to final approval. These trials were conducted in week 40 for confirmation and resulted in acceptance by Panel A for the US drying profile at 1'700 kg/hr per dryer.

BOZ has now confirmed these results on the remaining blends and subjectively screened the results through the local Panel B with acceptance. Burley production is now at the 1'700 kg/hr rate, resulting from confirmation on BBS, L&M, Merit and Philip Morris production.

REFERENCES

(1) Newman-T.A. to distribution, "P&S Dryers Cooling Zone OV's", November 11, 1986

(2) Committee Report to distribution, "P&S Operating Standards", July 14, 1987

(3) De Borst-E. to Friedrich-H., "Burley Capacity Increase", December 14, 1987

(4) Van der Scheun-H.J. to distribution, "Capacity Increase Tests of Burley Line at BOZ on 01/09/88 and 02/09/88, ML017"

(5) De Borst-E. to Darrah-S., "Burley Capacity Increase BOZ", September 29, 1988

(6) De Borst-E. to Darrah-S., "Marlboro Burley Capacity Increase BOZ (acceptance confirmation), November 27, 1988

(7) Willems-M. to meeting participants, "Capacity Increase of the Burley Lines (proposal for other blends), November 11, 1988

(8) Van der Scheun-H.J. to distribution, "Capacity Increase P&S Dryers" test report ML055, Dec. 20, 1988

(9) Van der Scheun-H.J. to distribution, "Capacity Increase P&S Dryers" test report PM020, Jan. 20, 1989

(10) Van der Scheun-H.J. to distribution, "Capacity Increase P&S Dryers" test report MG007, April 14, 1989

ANF/CWO/cav/April 20, 1989
qr189turncwo

2021607970

RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION	:	PROCESS DEVELOPMENT
SUBJECT TITLE	:	VOLGA
PERIOD COVERED	:	JANUARY - MARCH 1989
WRITTEN BY	:	Lüthi-N. (NIL)
KEYWORDS	:	volga, total, blend, expansion, technology, tobacco, ftr, et, burley, fc, orient

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OBJECTIVES

Using the total blend expansion technology, produce a stock of expanded tobacco which will then be used by Product Innovation group in the context of this project as well as for other projects using total blend expanded tobacco.

STATUS

A total blend expansion run of 1'000 kg was carried out in March 1989 in the FTR ETNA installation in Onnens. The tobacco for this trial, consisting of 25% Burley, 55% Virginia and 20% Orient, was processed (conditioned, cased and cut) on March 14, 1989, in the FTR Primary and expanded the next day in Onnens. The same processing procedure was applied as in an earlier run in November 1988 for project RODEO (1).

A trial report will be issued jointly by the ET Process Engineer and the undersigned.

The necessary follow-up with the expanded product will be carried out by the Product Innovation group at R&D Neuchâtel.

REFERENCE

(1) Dufour-P., Lüthi-N., report to Babey-J., "Essai d'expansion RODEO", December 19, 1988

NIL/cav/April 24, 1989
qr189volgnil

2021607971

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : WEASEL

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Lüthi-N. (NIL)

KEYWORDS : weasel, tobacco, blend, mlf, expansion, et, ch, bur, fc, ml

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OBJECTIVES

This project is carried out in the context of the Marlboro taste improvement program.

STATUS

As reported earlier, a batch of 3'000 kg tobacco was expanded in December 1988 in the FTR ETNA installation in Onnens (1).

In addition, a run of 1'000 kg was carried out in February 1989. The tobacco for this trial, consisting of 100% Virginia, was processed (conditioned, cased and cut) on February 14, 1989, in the FTR Primary and expanded the next day in Onnens.

Trial reports covering the two runs were issued jointly by the ET Process Engineer and the undersigned (2, 3).

The necessary follow-up with the expanded tobacco will be carried out by the Product Development group.

REFERENCES

(1) Lüthi-N., Quarterly Report, October-December 1988, p. 97

(2) Dufour-P., Lüthi-N., report to Babey-J., "Essai d'expansion WEASEL, lot 70297", January 11, 1989

(3) Dufour-P., Lüthi-N., report to Babey-J., "Essai d'expansion WEASEL, lot 70327", February 28, 1989

NIL/cav/April 24, 1989
qr189weasnil

RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION : PROCESS DEVELOPMENT

SUBJECT TITLE : WHISTLER

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Pulfer-P. (PEP)

KEYWORDS : whistler, primary, process, european, affiliate, pm, equipment

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OBJECTIVES

Collect and update information on primary equipment and process unit operations of PM European affiliates.

Develop a standardized format within Process Development for equipment and process data in order to have a baseline from which comparisons can be made and operational differences identified.

STATUS

Two visits were made to BOZ (weeks 43/88 and 4/89) to become familiar with their primary operation. The information and data collected were assembled in draft form, containing detailed equipment specifications and process parameters. This document has been reviewed with the training department in BOZ in week 13.

A visit to Berlin was made during week 14 to collect information for a primary equipment manual in the same format.

PLANS

It is planned to issue the primary description draft for BOZ in May for comments and the final version by the 3rd quarter 1989. In parallel, a draft for the Berlin primary description will be prepared.

It is planned to include the Munich primary information during 1989.

P. Pulfer

PEP/cav/April 13, 1989
qr189whispep

2021607923

NEW PROD. DEVELOPMENT

DIVISION : NEW PRODUCT DEVELOPMENT

SUBJECT TITLE : PRODUCT INNOVATION

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : GAWAD-A (AHG)

KEYWORDS : project,volga,cigarette,filter,profile, menthol,tobacco,wrapper,material,venoge, tube-in-tow

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PROJECT VENOGE - NO 0275

Objective

To develop a 7-9 mg tar cigarette offering mildness, cleanness and freshness.

Status

Referring to our last report (ref 1.), project Venoge is reactivated. Marketing's final decision for the blind product test is for a 4 mg tar cigarette, so two blends (PMS and Thames which have 600ppm of menthol in the AC solution) were chosen and we produced 4 mg tar on a PMS cigarette construction.

The expert panel evaluated these two prototypes and they found that the menthol application is not sufficient for a 4 mg tar configuration. Also the panel advised that we produce a new series of prototypes with standard PMS blend, having a higher level of menthol in the AC solution. Table 1 shows the smoke results and the characteristics of these prototypes. The taste evaluation by the expert panel was as follows (ref 2).

"Prototype 21P : is preferred. It is clean, there is just a note of freshness and it carries good tobacco taste.
Prototype 20P : is just not delivering enough freshness.
Prototype 22P/23P : carry freshness but the taste turns to chemical and bitterish side. Not acceptable".

Therefore, prototype 21P will be used in a blind product test.

Plans

A new Virginia blend instead of blend Thames is ongoing to produce a second alternative prototype.

References

[1] Abdelgawad-A, Quarterly Report, October-December 1988
[2] Panel A, Project Venoge, April 7, 1989

PROJECT VENOGE - TABLE 1

Prototype No		PMSR1	20P	21P	22P	23P
Code on Pack		A	B	C74	Q58	C95
Blend name		----------Standard PMS----------				
Version		A	B	C	D	E
Menthol level	(ppm)	--	600	700	800	900
Tar	(mg/cig)	4.8	5.0	5.0	5.2	4.9
SN	(mg/cig)	0.40	0.42	0.41	0.44	0.43
Ventilation	(%)	55	52	54	53	53
Cig. RTD	(mm WG)	111	110	107	107	108
Cig. format	(mm)	----------84/27.5/7.9----------				

PROJECT VOLGA - NO 0164

Objective

To develop tube-in-tow filters in order to produce 1 mg, 4 mg and 6 mg tar cigarettes (84 mm length) with improved initial puffs.

Status

Referring to our last report (ref. 1), we produced a new batch of total blend expansion. Cigarette prototypes made with this blend are being completed. Marlboro Lights Germany blend will be used to produce a 6 mg tar cigarette, in an attempt to improve the taste as a result of a flat smoke profile. Cigarette prototypes made with this blend are also being completed.

Reference

[1] Abdelgawad-A, Quarterly Report, October - December 1988

PROJECT DOUBS - NO 0201

Objective

To develop a cigarette wrapped with tobacco material.

Status

Referring to our last report (ref.1), we tried again to produce cigarette prototypes using the tobacco wrapper material but in vain. It was difficult to run this material on the cigarette maker because the width was bigger (30 mm) than we specified. That could be explained by the fragility problem on the garniture.

These tobacco wrapper materials have been ordered for the second time at the right width (27.5 mm).

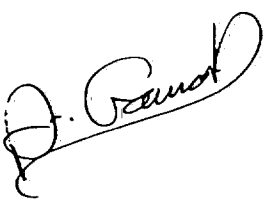
Plans

Cigarettes prototypes made with this material will be completed once we receive the materials.

Reference

[1] Abdelgawad-A, Quarterly Report, October - December 1988

AHG/02.05.89



2021607977

DIVISION : NEW PRODUCT DEVELOPMENT

SUBJECT TITLE : CIGARETTE DEVELOPMENT EEC

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : DE ZUANNI-M (MDZ)

KEYWORDS : ski,handball,rodeo,zeus

PROJECT SKI (GB) - NO 0244

Objective

To develop a King Size Virginia type cigarette for the British market.

Format : 7.90/84/21/25 mm
Tar : 14.5 mg/cig
SN : 1.1 mg/cig

Status

Trials with different levels of humectants on tobacco were conducted. Finaly, prototype 10P (non ventilated) made with no humectants on filler and the 110-6 HFE cigarette paper was selected.

PROJECT HANDBALL (GB) - NO 0241

Objective

To develop a King Size Virginia type cigarette for the British market with a low SVC.

Format : 7.90/84/21/25 mm
Tar : 14.5 mg/cig
SN : 1.1 mg/cig

Status

Prototype 8P (non ventilated) was selected.

PROJECT RODEO (GB) - NO 0242

Objective

To develop a King Size Virginia type cigarette for the British market with a low SVC by using the total blend expansion technology.

Format : 7.90/84/21/25 mm
Tar : 14.5 mg/cig
SN : 1.1 mg/cig

Status

Prototype 8P (ventilated) was selected. A second selection between 8P (Handball) and 8P (Rodeo) was made and prototype from project Handball was preferred by Panel A.

PROJECT ZEUS (GR) - NO 0193

Objective

Introduction of expanded tobacco in the Greek Marlboro.

Format : 7.90/84/20/24 mm
Tar : 16 mg/cig
SN : 1.1 mg/cig

Status

Prototype 12P was selected.

MDZ/24.04.89

DIVISION : NEW PRODUCT DEVELOPMENT

SUBJECT TITLE : CIGARETTE DEVELOPMENT EEMA

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : LIZZI-R (RLI)

KEYWORDS : saida,tirana,delbert,bibione,sake,rl,si,sf, re,hu

PROJECT SAIDA (RL) - NO 0161

Objective

Blend optimization on VA004 (cig. VAF)
Format : 7.90/19.0/79.0 mm
Tar (printed) : 12.0 mg/cig
SN (printed) : 0.8 mg/cig

Status

Prototype 008P was selected for production start in FTR.

PROJECT TIRANA (SI) - NO 0305

Objective

Blend optimization on VA004 (cig. VAL)
Format : 7.90/19.0/79.0 mm
Tar (printed) : 8.0 mg/cig
SN (printed) : 0.60 mg/cig

Status

Prototype 006P was selected for production start in FTR.

PROJECT DELBERT (SF) - NO 0067

Objective

To develop a 2 mg DPM (VTT) cigarette for Finland.

Format : 7.90/25.0/79.0 mm
DPM (VTT) : 2.0 mg/cig

Status

The selected prototype was sent to Finland for VTT certificate.

PROJECT BIBIONE (RE) - NO 0065

Objective

To develop a Chesterfield for Réunion using MLB-12 construction.

Format : 7.90/20.0/84.0 mm
Tar : 15.0 mg/cig
SN : 1.07 mg/cig

Status

Prototype 001P was selected for production start.

PROJECT SAKE (HU) - NO 0062

Objective

To develop a Marlboro Lights for Hungary.

Format : 7.90/20.0/84.0 mm
Tar : 12.0 mg/cig
SN : 0.90 mg/cig

Status

Prototype 003P using WP 60 cigarette paper was selected for production start in Hungary.

RLI/24.04.89

2021607981

DIVISION : NEW PRODUCT DEVELOPMENT

SUBJECT TITLE : FLAVOR DEVELOPMENT

PERIOD COVERED : SEPTEMBER 1988 - MARCH 1989

WRITTEN BY : FATTON-JP (JPF)

KEYWORDS : danube,thames,venoge,penny,zillah,casing, flavor,taste.

PROJECT DANUBE - NO 0150 / PROJECT THAMES - NO 0724

Objective

To develop cigarettes at various tar levels with distinct non-tobacco taste directions.

Description

Injections were made on THAMES 6P prototype with the following flavors :

- Floral acacia
- Spice mixture (cinnamon, mace)
- Spice mixture (basil, rosemary, marjoram)
- Floral honey
- Apricot
- Vanilla
- Coffee
- Cocoa/chocolate

Floral acacia, spice mixture (cinnamon, mace type), floral honey, apricot and vanilla gave the best results. The other flavors do not deliver any really distinctive taste. They improved the tobacco flavor sensation without adding any really distinctive notes.

The flavors to be used in DANUBE 10P prototype will be different from the ones used in THAMES 6P prototype for the following reasons :

- DANUBE 9P and 10P prototypes are ultra-low tar cigarettes with a high level of ventilation. The taste of the cigarette as such is rather weak even by using flavors on the tobacco.
- The amount of flavor to be released from the granules by the ventilating air will be sufficient to cover the tobacco taste. In this case the flavor of the granules contributes more to the global taste sensation than the smoke itself.
- The very small amount of burnt and ammoniacal notes should allow the use of flavor complexes like citrus for example. These were covered by the more pyrogenic and ammoniacal taste of the cigarettes delivering more smoke and tobacco taste.

Follow-up

Volatile flavors must be developed to fit with DANUBE concept. The best cigarettes will be selected to go in a market test as soon as the legal status information on the flavors is available from the suppliers.

PROJECT VENOGE - NO 0275
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Objective

To develop a low tar cigarette delivering a clean fresh taste without pronounced menthol sensation.

Description

After taste evaluation the objective was redefined and the new target was to develop a cigarette at 4-5 mg tar.
The PMS configuration was selected as the most appropriate one. Cigarettes were produced using the standard PMS blend and the standard PMS construction, the only difference between the prototypes being the variation in the amount of menthol added to the PMS aftercut. Trials were made using 600 ppm, 700 ppm, 800 ppm and 900 ppm of menthol on cut filler.
A new version of the 3P prototype is currently under development with a tar delivery more in line with the objective.
The Virginia blend of this new version will be treated with EPC - 123 as precut solution and EAC - 216 as aftercut solution.

Evaluation

Prototypes were taste evaluated by panel A. The PMS version made with the cut filler containing 700 ppm of menthol was preferred. All the other versions delivered a more artificial, woody taste and too much menthol (cooling) sensation to be described as only fresh and clean.

Follow-up

A market test will be scheduled with the PMS (700 ppm menthol) versus the new Virginia candidate.

PROJECT PENNY - NO 0556

Objective

To develop an American blend cigarette in the low price segment for Switzerland delivering 12 mg tar and 8.0 puffs.

Description

After several trials with various casings and flavors, satisfying results were obtained by spraying the blend with the following solutions :

- Burley spray	: EBC-94	103.0	liters/1000 kg total blend
- Burley-Top flavor	: ETF-44	20.0	liters/1000 kg total blend
- Bright casing	: EPC-128	35.0	liters/1000 kg total blend
- Aftercut solution	: EAC-233	28.7	liters/1000 kg total blend

Cigarettes were made and taste evaluated.

Evaluation

The taste of the 39P and 40P cigarettes where the blend was sprayed with the above-mentioned flavor system was found to be of good quality, to the smooth side, balanced and satisfying. The taste of the Swiss tobacco contained in the blend is still detectable but the unpleasant woody, papery, cigarish notes are covered by the aromatic components of the flavor system.

Follow-up

Additional prototypes will be produced in order to adjust the filter RTD and test the effect of a charcoal filter on this type of product.

PROJECT ZILLAH - NO 0070

Objective

To develop three different cut fillers at three different prices to be exported to Malta.

Description

Three different flavor systems were developed for this project.

Version A: Low price blend sprayed with a single blend casing and aftercut solution.

- Bright casing : EPC-139
- Aftercut solution : EAC-240

Version B: Middle price blend with classical American blend type casings and flavors.

- Burley casing : 12.0073
- Burley-Top flavors : 12.0128
- Bright casing : EPC-140
- Aftercut solution : EAC-246

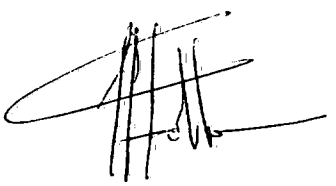
Version C: High price blend with classical American blend type casings and flavors.

- Burley casing : 12.0073
- Burley-Top flavor : 12.0128
- Bright casing : 12.0469
- Aftercut solution : EAC-245

Cigarettes were made with these three different blends in the same cigarette construction.

Follow-up

Taste evaluation will take place after the aging period of prototypes.



JPF/25.04.1989

2021607985

QUALITY ASSURANCE

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : MATERIAL TESTING

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Kürsteiner-C. (CHK)

KEYWORDS : Force, blank, sliding, spring, crushing, filter, tipping, paper, inner foil, varnish, bundle, tervakoski, rentsch, score, coton.

INCOMING INSPECTION FOR FTR

The incoming inspection of non-tobacco materials used by FTR gave the following results :

- 441 deliveries were inspected
- 11 deliveries were refused

Refusals concerned only packaging materials.

Incoming inspection of inner foil for mentholation for affiliates continued.

QUALIFICATION TRIALS

The qualification trials for cigarette and packaging materials carried out during the reporting period were guided by the objectives of :

- improving the quality of our products
- standardizing the materials used in Europe
- evaluating alternative suppliers

HL Blanks

MER-XD HL Blanks were tested with a new quality of cardboard proposed by Iggesund. This cardboard was tested with blanks delivered from Gundlach, Rentsch and Interdruck. All trials were positive.

Inner foil

A new slip coating was proposed by Vaassen Aluminium, which should replace the actual PVC lacquer used. The test was negative due to bad coating resistance after menthol application.

Bundle paper

A new coating was proposed by Hifi-Press which should replace the current wasserlack coating. The test was positive, however no further investigations will be made until the "Project Pack" has been finalized.

Tipping paper

An initial trial was made with test bobbins from Miquel y Costas. The objectives are to qualify a second supplier on the VISA brand for Saudi Arabia. The trial was negative.

An initial trial was made with test bobbins from Tann. The objectives were to qualify a second supplier on white base paper. The trial was positive.

An industrial trial performed on the MER brand with objectives of improving gluability and finished product quality has been completed. One more industrial trial with a greater quantity of bobbins will be undertaken.

An industrial trial performed on the MAB brand with the objectives of qualifying a new base paper supplier was made. Results were positive, however the supplier will be approached again to check whether some improvements could be made in order to get still better gluing.

Polypropylene film

In order to have a third source of OPP films, films for HL blanks and for Display Cartons were tested. The trial on HL blanks was positive and the trial on the DC's negative. The supplier will be contacted in order to undertake further tests.

ASSISTANCE TO LICENSEES AND HEADQUARTERS

Various tests were carried out upon request.

Cigarette paper from Rossi and Maglio were analysed. The test results were negative and totally unacceptable. The variations obtained in the cigarette paper would lead to high product variations when monitored.

2021607988

SUPPLIER CONTACTS

Correlation program continuing.

A presentation was given to Miquel y Costas showing test results. New tests to be made on the tipping paper to qualify for the VAF brand were also discussed.

A presentation was given to Rentsch showing test results obtained on the HL blanks with new score design. A new action plan with modifications was also discussed.

A presentation was given to Iggesund showing a study on brightness measurements. The final objectives were to present specifications with a method, to which both the supplier as well as PM could agree.

Tervakoski, supplier of cigarette paper to our Finnish Licensee was audited. A presentation of PM's quality philosophy was given.

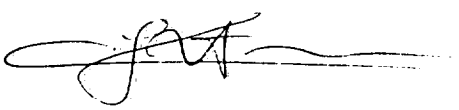
SPECIAL PROJECTS

In view of worldwide standardization of the Marlboro Red, color measurements were made on various color standards and a presentation was prepared for Packaging Engineering. This presentation will be given to PM-USA management.

The repeatability and reproducibility tests undertaken on the newly developed crimp and total denier tester have been completed. All instruments were dispatched to affiliates.

A presentation was given to FTR Production, Packaging Engineering and FTR Purchasing showing test results obtained on the HL blanks with new score designs. It was also explained how the new score design will be gradually introduced at all HL suppliers.

Due to the tremendous problems in qualifying an alternative supplier of inner foil for FTR and due to various changes which had to be made to the inner foil, a material trial concept was established and presented to FTR Production and Purchasing. All participants agreed to follow the concept.



CHK/vep/April 14, 1989
qr189mtchk

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : CIGARETTE AND SMOKE ANALYSIS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Senehi F. (SEF)

KEYWORDS : Legislation, Spain, analytical, results, Camel Winston, Barclay, Brazil, LNE, FR, firmness

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SPANISH LEGISLATION

From March 1989 onwards, the tar and smoke nicotine values will be printed on the packets for all brands.

Cigarettes classified as "Low Nicotine and Tar" (including "Light" and "Mild" cigarettes, and any similar designations adopted subsequently) should have a tar content not exceeding 13 mg and a nicotine content not exceeding 0.9 mg.

New cigarette products introduced on the market should have a tar content not exceeding 15 mg and a nicotine content not exceeding 1.3 mg. In the case of new products classified as "Low Nicotine and Tar", the maximum deliveries allowed will be 10 mg for tar and 0.8 mg for nicotine.

The sampling procedures and the tolerance limits for brands which are already on the market have not yet been clearly defined.

ANALYTICAL RESULTS ON CAMEL AND WINSTON SOLD IN EUROPE

(See Appendix 1)

A study was carried out to compare Camel and Winston LS/KS versions sold in Europe (26 versions in all) (1).

Analytical results showed that, in the same family, the results of smoke deliveries were somewhat different due to differences in alkaloid content of tobacco, % ventilation, filter length and/or filler density.

CF was detected on four versions only : Winston LS Sweden, Winston LS and KS Switzerland and Camel KS Switzerland (2).

BARCLAY SOLD IN BRAZIL AND PRODUCED BY SOUZA CRUZ

The analytical results carried out on this brand showed that this cigarette does not correspond to the typical Barclay versions sold either in Europe or in the USA. This version was characterized by a ventilation level (48%) much lower than that usually observed on European versions (about 80%) (3).

		Brazil	Switzerland
Tar Channels open/occluded	[mg/cig]	4.0/8.1	0.3/9.6
DIN Average		6.0	5.0
SN Channels open/occluded	[mg/cig]	0.30/0.47	0.05/0.79
DIN Average		0.39	0.42
Puff count Channels open/occluded	[No./cig]	7.0/6.4	8.6/6.4
Cig. RTD Channels open/occluded	[mmH_2O]	87/184	31/173
Ventilation Channels open/occluded	[%]	48/3	82/6
Expanded Tobacco	[%]	2	30
Filler Density	[mg/ml]	240	204
Total Alkaloids	[%]	1.68	2.26

PM BRANDS TESTED BY THE OFFICIAL FRENCH LABORATORY (LNE)

All PM brands sold in France were tested by LNE during a five-month period in 1988. All the brands comply with the regulations of article 3 of the decree dated January 30, 1978. A complete report will be established soon.

2021607991

COMPARISON OF FIRMNESS MEASUREMENTS BETWEEN PM-USA CTSD AND PME-R&D CI LABORATORIES (PROJECT FARWEST)

Objective

To establish a regression curve which allows firmness values measured under ISO conditions to be converted into firmness values measured under FTC conditions (4).

Status

Ambient conditions are known to influence the results of firmness determinations. PME laboratories traditionally operate under controlled conditions which differ from those specified in PM-USA due to legal requirements for measurement of smoke deliveries, respectively ISO conditions (22°C = 71.6°F; 60% RH) and FTC conditions (75°F = 23.9°C; 60% RH).

This test was carried out in Neuchâtel (ISO conditions) and in Richmond (FTC conditions) on nine PM brands which cover a wide enough firmness range. Fifteen measurements were carried out on each brand and at each location.

PRODUCT REPORTS (SEF)

Product Reports were written for the following new brands:

Brand	Printed values	Manufacturer	Country of sale
Bastos International KS/F	Tar/SN = 12.8/1.10	Cinta	Belgium
Winston Lights LS/F	Tar/SN = 8.5/0.75	Reynolds	Belgium
Royale Ultra Legere 100/F	Tar/SN = 2.0/0.22	Seita	France
Pierre Cardin Extra Menthol 100/F	Tar/SN = 4/0.4	Burrus	Switzerland
Pierre Cardin Extra 100	Tar/SN = 4/0.4	Burrus	Switzerland
Pierre Cardin Mild 100/F	Tar/SN = 9/0.8	Burrus	Switzerland
Capri 100/F		B.A.T.	United Kingdom
Premier 100/F		Reynolds	United Kingdom

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1. Report by Senehi-F., dd. March 23, 1989
2. Report by Renaud-J.M., dd. March 20, 1989
3. Report by Senehi-F., dd. April 4, 1989
4. Report by Zuber-J., dd. March 29, 1989

APPENDIX 1

ANALYTICAL RESULTS ON CAMEL AND WINSTON SOLD IN EUROPE

	Tar [mg/cig]	SN [mg/cig]	Puff Count [No/cig]	Filler Density [mg/ml]	Total Alkaloids [%]	Ventilation [%]	Filter Length [mm]
CAMEL LONG SIZE							
France	15.4	1.14	8.2	240	1.95	14	19
Belgium	13.3	0.84	8.0	249	1.55	14	19
Norway	16.6	1.08	8.5	264	1.92	0	19
Sweden	16.8	1.30	9.0	265	1.92	0	19
Spain	17.0	1.11	7.7	248	1.67	0	20
Canary Islands	16.9	1.10	8.2	246	1.61	0	20
CAMEL KING SIZE							
France	14.8	1.05	8.2	244	1.89	0	21
Netherlands	15.5	1.11	9.0	246	1.81	15	21
Italy	12.9	0.91	8.7	235	1.91	15	21
France	14.6	1.12	9.1	234	1.97	15	21
Germany	13.3	0.94	8.1	235	1.97	14	21
Austria	13.0	0.85	8.8	261	1.70	18	23
Greece	16.2	1.07	8.3	249	1.76	0	20
WINSTON LONG SIZE							
France	15.3	1.15	8.3	245	1.98	17	19
Belgium	13.3	0.82	8.1	246	1.46	13	19
Norway	16.4	1.06	8.8	269	1.70	0	19
Sweden	16.9	1.33	8.6	266	1.91	0	19
Austria	15.9	0.99	8.5	263	1.48	0	20
Spain	15.4	0.98	7.9	253	1.74	0	20
Canary Islands	16.9	1.10	8.0	248	1.64	0	20
Switzerland	15.9	1.14	8.8	255	1.89	18	19
WINSTON KING SIZE							
Switzerland	15.3	1.12	9.3	252	1.84	17	21
Netherlands	15.3	1.06	9.0	249	1.79	16	21
Italy	13.3	0.84	7.6	223	1.89	0	20
Germany	13.9	1.00	8.3	229	1.96	12	21
Greece	16.4	1.20	8.4	257	1.87	0	21

sef/10.4.89

2021607994

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : TOBACCO MONITORING

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Orsan-G. (GUO)

KEYWORDS : tobacco, monitoring, reconstituted, uzorak, tla, tqa, rubens, eec, audit, stem, strip, distribution, oven volatile, weight, processor, leaf, it, br

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TOBACCO LOT ANALYSIS (TLA)

Assistance to the PM-EEMA Leaf Department

At the request of PM-EEMA Leaf Department, four samples of reconstituted tobacco ex Podr Slatina, Jugoslavia, were submitted to TLA analyses. These samples were coded UZORAK-A,B,C, Regular. The complete results will be sent to the Leaf Department.

Assistance to the PM-EEC Leaf Department

1) In the context of Project EEC, sixty-six (66) samples of tobacco from various origins (FR, IT, GR, DB, BE, PO) were sent to Onnens for TLA analyses. The scope of this project is to collect analytical data on the European tobacco types/qualities which are not bought by PME and maybe find some grades which might be suitable for PME blends.

   Status:

   Nineteen (19) samples were analysed and the respective results sent to EEC Leaf Department. Sixteen (16) samples are presently under analysis. We continue analysing the remaining samples at a rate of 3-4 samples per week.

2) In the context of the assistance given to PM-Brazil Leaf Department by PM-EEC Leaf Department, tobacco samples of the grades used for PM Brazilian blends are currently being sent to Onnens for TLA analysis. About 40 samples should arrive in Onnens.

Status

Seventeen (17) samples were received and immediately processed through TLA. The results will be transmitted directly to the EEC Leaf Department.

3) In the context of Project RUBENS, twenty samples of Malawian flue-cured and Burley tobaccos were submitted to TLA analyses. The scope of this project is to study the degradation as well as the analytical results of tobaccos of different types, different grades and packed with different specifications.

Status

All twenty samples are being analysed.

TOBACCO QUALITY AUDIT (TQA)

The audit program consists of the physical analysis of offshore flue-cured and Burley tobacco strips for :

- strip size distribution
- stem content and size
- oven volatiles
- net tobacco weight

The objective is to provide the PME Leaf Buyers with the necessary information to identify tobacco processors in need of processing improvements by comparing the obtained audit results of the different tobacco processors per country and setting specifications for the audited parameters by grademark, tobacco type and origin.

Status

The following tobacco purchases have been audited and the respective audit report has been transmitted to the PME Leaf Department :

1988	Argentina	crop (4 FC + 3 BU)
1987	Greek	crop (3 BU)
1987	Italian	crop (3 BU)
1988	Mexican	crop (3 BU)
1988	Burundian	crop (1 BU)
1988	Zambian	crop (1 BU)
1988	Malawian	crop (7 FC + 8 BU)
1988	Zimbabwean	crop (11 FC)

2021607996

Follow-up

We will then audit the 1988/87 purchases of the following countries :

1988	Zambian flue-cured crop
1987/88	Italian flue-cured crop
1987	Yugoslavian crop
1987/88	Hungarian crop
1987/88	French crop
1987	Indian crop

Assistance to the PM-EEC Leaf Department

At the request of PM-EEC Leaf Department, QA assistance was given during the 1989 Italian Burley buying trip. The following suppliers were visited :

- Trestina Azienda Tabacchi
- Deltafina
- Primotab
- Azienda Tabacchi Italiana (ATI)
- Intabex

A detailed audit of the respective laboratories and equipment was carried out at each location. A report was issued with all the modifications to be made to the equipment to satisfy PME specifications.

QA assistance will be needed at ATI and Intabex when they start PME production, in view of the problems encountered and the fact that this will be the first time they produce for PME.

Assistance to Leaf Processors

At the request of PM-EEC Leaf Department, a one week TQA training support was given to Mr. Miles Trusthan, QA manager from our supplier ZLT (Zimbabwe Leaf Tobacco).

GUO/vep/April 6, 1989
qr189tmguo

2021607997

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : ANALYTICAL SERVICES

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Turpin-D. (DAT)

KEYWORDS : tipping, seam, glue, filter, gelatin, flavor, charcoal, menthol, licorice, ethanol, humectant, alu-foil, paper, casing, cochise, sugars, optical brighteners, methods

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1. ASSISTANCE TO FTR

1.1 INCOMING INSPECTION

The objective of Incoming Inspection is to ensure the constant quality of ingredients, filter additives and glues used by FTR as well as conformity of each delivery to PM specifications. During the reporting period, 123 deliveries were checked by Analytical Services. Only one was refused :

- TENSOCHEMA physical mixture of 50% MPEG 550 + 50% MPEG 750. Incoming Inspection sheet 2928. The defect was a light brown color caused during storage by a poor resistance of the drums' inside coating. The shipment was returned. After investigations, the supplier delivered 440 kg of the mixture in two new quality drums which will be evaluated in April.

The Cochise production plant in Onnens had serious trouble grinding the Suchard cocoa peels due to their high fat content. Sieving solved the problems for Suchard-Lorrach peels. Suchard-Lorrach peels were not ordered any longer as the supplier could not guarantee a low fat content due to changes in the roasting process of beans. Investigations are under way.

1.2 FOIL MENTHOLATING

Menthol content was routinely determined :

- on alu-foil for 24 various productions of mentholated bobbins for FTR and export,

- on cigarettes for 10 various productions of FTR mentholated brands.

All results complied with specifications.

Menthol content tolerances for cigarettes based on analytical data from the last three years will be introduced in specifications. A statistical sampling procedure is being investigated.

1.3 SPECIAL PROBLEMS

Standardization of menthol solutions

North Pole production switched to SFM-D solution which is used for most mentholated brands. Trials will be resumed for two other FTR brands still produced with SFM-A-1 and SFM-B-1 solutions.

Vapor tunnel for Burley casing

Further to the installation of a vapor tunnel before the Burley casing cylinder, analyses were made to examine its effect on the humectant content. Results revealed no variation due to the installation of the tunnel.

Ethanol at the flavoring room

Analyses were made in order to evaluate the effect of the new ventilation equipment installed at the exit of AC cylinder. They pointed out a drastic decrease of the ethanol content in the air of the flavoring room. However, the residual ethanol content of cigarettes remained unchanged.

Preparation of CA-INM-FI solution

Tolerances were defined for the quality control of this solution by density and refractive index measurements. The production control will be made by QA Analytical Services.

Spotted cigarettes

Humectant analyses were made on the Pan-European Marlboro cigarettes from the various production centers. The results did not reveal a correlation between humectant content and cigarette spotting.

Five FTR brands are currently being analysed on a routine basis in collaboration with QC-FTR in order to examine the effect of humectant content on spot formation.

Chloride content in tobacco

Chloride content was determined in various samples of Swiss FC tobaccos.

ETNA casing solution

Flash point was determined for safety administration.

2. ASSISTANCE TO AFFILIATES

Foil mentholating for PMG-B

Investigations were made to solve working problems for packaging on GD-X2. A program was established. An improvement was obtained by moving the nozzle to the foil center. Trials aimed at spreading menthol on the whole surface of the paper are under way. The effect of the paper layer will be investigated.

Foil mentholating for PMH

It was confirmed that the plastic packaging bags efficiently protect the mentholated bobbins during storage at 35°C for at least 10 weeks.

Incoming inspection of invert sugar at PMG

The Borgwaldt refractive index method was compared to HPLC and enzymatic test methods used by QA for sugar analyses. The Borgwaldt method enables us to make a valid evaluation of total sugar content. However, it does not enable us to distinguish glucose, fructose and sucrose and therefore to really confirm compliance of invert sugar with specifications.

3. ASSISTANCE TO HEADQUARTERS AND LICENCEES

Foil mentholating for ATO-Finland

The project to introduce foil mentholating for the production of Marlboro Menthol and Belmont Menthol in Finland was finalized. Regular productions of mentholated bobbins for both brands are planned to start at FTR in June.

Chloride in tobacco

Chloride content was determined in tobacco samples from various origins.

RL SLATINA - Yugoslavia

Humectant analyses were made on various RL samples for trials aimed at producing DEG-free Bond cigarettes.

Marlboro filters produced in Algeria and Senegal

Triacetin content was determined to confirm compliance with specifications.

4. ASSISTANCE TO OTHER GROUPS

Material Testing

Finish oil content and single denier were routinely determined on samples of tow for incoming inspection by both traditional and infraalyser methods.

Additive content of some cigarette papers was routinely determined to evaluate its effect on paper combustion speed. No correlation was detected in the additive content range of the shipments examined.

Additive and filler content were determined in various cigarette papers from ROSSI, MAGLIO and PDM for analytical evaluation.

Ash determinations were made on a CSSR tipping paper supposed to cause sharpness loss on the licencee's machines. Results were compared to those of TANN and BENKERT that do not cause such problems. They were found to be similar.

Manufacturing Services

Base flavor reference samples from PMI were examined for future incoming inspection.

Investigations are being made to set safety sheets for export solutions.

2021608001

Product Research

Analyses of humectants, water, ethanol and sugars were made for the development of an infraalyser method for the incoming inspection of liquid flavors.

Thermogravimetric analyses were made for project AREUSE to examine the desorption of glycerin on porous polymers.

Product Development

Menthol content of cigarettes was determined for project VENOGE.

Quality Audit

Menthol content was determined in PM and competitors' brands for CIR.

Process Development

Humectant content of various tobacco samples was determined for projects ADMOIST, RACOON, FOX, VOLGA, WEASEL and ZEUS.

Tobacco Quality Audit

Humectant and silicium dioxide analyses were routinely made on samples from various tobacco batches.

5. QUALIFICATION TRIALS

A new product is only accepted if it has successfully passed the following tests and trials :

- Analytical evaluation to examine the conformity of the product to PM specifications and the German legislation.
- Production of cigarettes and subjective evaluation by Panel B and Panel A.
- Machinability trials.
- Industrial trials.

5.1 QUALIFICATION OF ALTERNATIVE SUPPLIERS

The following trials were initiated to qualify alternative suppliers of ingredients, filter additives and glues.

- Physical mixture of 50% MPEG 550 and 50% MPEG 750 from BP. Qualification was finalized for FTR further to the first industrial shipment.

2021608002

- Synthetic menthol from TAKASAGO. Analytical evaluation was successful. Trials will be resumed for subjective evaluation.

- Natural menthol "Glacier Brand" from China, supplied by FUERST DAY LAWSON. Analytical evaluation was successful. However, trials were abandoned due to foreseen decrease of natural menthol needs.

- Block licorice from SISTAS. Analytical evaluation was successful. Subjective evaluation is planned for the next three months.

- Block licorice 448 from EVD. Analytical evaluation was successful. Subjective evaluation is planned for the next three months.

- Block licorice X and MBC from ETAS. Analytical evaluation is under way.

- Powder licorice from SISTAS. Analytical evaluation was not successful. Another sample is expected.

- Powder licorice SMYRNA and SP511-75 from ETAS. Analytical evaluation is under way.

- Powder licorice from EVD. Samples are expected.

- Powder licorice from FERTILIZERS & CHEMICALS. Due to taste variations of cigarettes produced at PMG with the first industrial shipment, industrial trials were resumed at FTR to check the effect on taste. The subjective evaluations by Panel A and Panel D were successful. Qualification was therefore confirmed.

- Cochise from THORESEN. Investigations are made by the supplier to find or install a mill in Europe for grinding cocoa peels. The trials will be made with the Suchard-Lorrach peels which are currently being supplied by THORESEN for cochise production at FTR.

- Propylene-glycol from HUELS. Trials were abandoned due to Panel A refusal.

- Propylene-glycol from ARCO-France and ERDOELCHEMIE. Subjective evaluation is under way.

- Cielok 303-1772 seam glue from NATIONAL STARCH. An industrial trial on two machines at FTR was successful. Another one is planned for the next three months.

- Cigarette seam glue for Raffles. Due to problems on Mark 9 at PM-UK with the currently used seam glue, trials were initiated to qualify Lesso 5067/1 and Cielok 303-1772 for Raffles. Subjective evaluation was successful for Lesso 5067/1. Cielok 303-1772 was refused. An industrial trial will be planned with Lesso 5067/1.

5.2 QUALIFICATION OF REPLACEMENT PRODUCTS

The possibilities of solving some technical problems were investigated by replacing currently used ingredients, filter additives or glues :

- Lesso 1520 tipping glue from LAESSER. The trials were aimed at decreasing the pressure on the application rolls and getting an easier regulation of the ventilation. Further to the success of several industrial trials, Lesso 1520 replaced Lesso 1516 G in FTR production.
  At PMB, local confirmation trials were not successful due to loss of ventilation. They may be resumed after the results of those currently under way at PMG & PMH.

- Lesso 1520 A and Lesso 1520 B tipping glues from Laesser. Both are versions of Lesso 1520 modified by adding slight amounts of Lesso 1516 G in order to extend gluability to specific papers. Trials are under way at FTR.

- Tuermer CF-510 tipping glue. An industrial trial is under way at PMH. Trials with a slightly reduced viscosity version of this glue are under way at PMG-B.

- Lessoflex B2G gelatin seam glue from LAESSER. The trials to investigate the possible use of gelatin as natural seam glue are for the time being delayed due to production constraints at PMG-B. They will be resumed in the near future after setting up a program in collaboration with PMG and establishing a protocol with R&D Richmond to determine pyrolytic components from gelatin.

- Lesso 2049 hot melt filter glue from LAESSER. A reduction in the wearing out of belts was expected. Subjective evaluation was not successful. Other samples are expected.

- Lesso 1794/2 PVA filter seam glue from LAESSER. Analytical evalution was not successful. Investigations are currently being made by the supplier.

- PICA activated charcoal RC 328 and RC 333. Due to a finer granulometry than that of the currently used charcoal, machinability and filter quality can be improved. Trials will be resumed for subjective evaluation and determination of the suitable amount of charcoal in filters.

- HAARMAN & REIMER synthetic menthol pellets. Less lumping than with the currently supplied crystals was expected. Qualification was finalized further to the success of industrial trials.

6. METHODS

The following methods were written. They are currently being evaluated by comparison tests with other laboratories in view of approval as official PME-QA methods :

- No 45. pH determination of packaging boards by a pH meter, was forwarded to Material Testing for evaluation.

- No 126. Determination of menthol content in cigarettes by GC. An interlab test was made with PMH to compare No 126 and PMH methods. An interlab test with PM-USA will be planned.

- No 221. GC determination of menthol and humectants in tobacco and reconstituted tobacco leaf. Interlab tests are under way with PMG, Park 500 and PM-USA. They will be planned with PMH.

A list was made of methods to be revised. Priority will be given to those needed for the setting of ingredient specifications.

D. Turpin

DAT/vep/April 7, 1989
qr189asdat

2021608005

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : VISUAL QUALITY AUDIT

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Jacquet-R. (RFJ), Morelli-M. (MMO)

KEYWORDS : market, survey, handbook, standards

ASSISTANCE TO ITALIAN MONOPOLY (RFJ)

RFJ participated in a visit aimed at assessing the feasibility of manufacturing PM brands in the MTI LECCE factory. Visual product quality was below PM standards. Technical problems were discussed. Proposals were made to PME Management regarding necessary improvements (1).

ASSISTANCE TO SNTA, GOURAYA ALI, ALGIERS (RFJ)

A visit was paid to the SNTA factory to train both the control and production personnel (operators and mechanics) and make them more concerned about quality. An audio-visual programme gave precise information on PM quality requirements with emphasis on the major defects encountered. Recommendations to solve certain technical problems were given.

MARKET SURVEYS (RFJ)

Reports were issued concerning market audits conducted in 1988 in the following countries:

Belgium - France - Holland - Italy - Switzerland - West Germany.

Results of these audits showed that differences in visual quality between competitors continued to level off in 1988. PM quality remained stable at levels considered as excellent to good. With the exception of Italy, it seems that in the audited markets, differences in visual quality are no longer large enough to give a strong competitive advantage to any of the competitors.

Summary of Weighted Quality Indices

	Belgium	France	Holland	Italy	Switzerland	West Germany
PHILIP MORRIS	534	685	473	532	344	235
MARKET average	513	629	586	1828	427	326
COMPETITORS' average	505	609	624	2497	495	372

HANDBOOK FOR VISUAL QUALITY AUDIT OF FINISHED PRODUCTS (MMO)

Objective

Develop a revised handbook of Visual Standards for Finished Products, jointly with PM-USA. Implementation of the new procedure at PME QA is planned for January 1st, 1990.

Status on Packaging Standards

Definitions and tolerances for Visual Standards have been completed and approved by QA directors of PM-USA and PME (Jan-Feb. 89). Regarding illustrations, a generic pack has been selected. PM-USA is now working on the tear tape standards category. Proposals will be submitted to PM-USA and PME QA managements.

Status on Cigarette Standards

A PME draft proposal for cigarette standards was circulated within PME (Affiliates and HQ) for comments. Our proposal was discussed with PM-USA in Richmond and the final draft for definitions and tolerances was prepared end March. Approval by QA directors is expected for end April.

Plans for 2nd Quarter '89

- Finalize definitions of Cigarette Standards.
- Revise inspection procedures for Packaging and Cigarettes.
- Define reporting system and structure of data-base.
- Co-operate with PM-USA to prepare illustrations for Standards' Book.

2021608007

REFERENCES

(1) Report by Jacquet-R. dd. March 6, 1989.

DIVISION : QUALITY ASSURANCE

SUBJECT TITLE : SUBJECTIVE CIGARETTE EVALUATION

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Monnin-E. (EMO)

KEYWORDS : panel, discriminative, consumer, project, bath

DISCRIMINATIVE PANEL

Panel B

The R&D Panel B organized 19 tests during January, February and March with the DDD-method (PME-method No 720). No significant differences were found between the trial and the control cigarettes in 17 tests. Differences significant at a 90 % or higher confidence level were found in 2 tests.

In order of importance, the tests were requested by :

	% of tests
Manufacturing Services	58
Material testing	21
Analytical Services	11
Panel Testing	10

CONSUMER PANEL

Two consumer tests using the standard comparison questionnaire were carried out in January at the request of the PME Leaf Department and of PME-QA Analytical Services respectively.

Comparison of standard Muratti (MAK 08) cigarettes with trial cigarettes containing LTR sheet showed no overall preference for either cigarette. However, subgroups of panelists from the main consumers' segment of the brand preferred the control cigarette (1).

Comparison of Swiss Marlboro King Size cigarette with trial cigarettes containing powdered licorice from Fertilizers and Chemicals showed no significant difference. The preference was well balanced at the level of total panel (2).

PROJECT BATH

An experiment was carried out to determine lip position around the edge of a cigarette. This phenomenon is responsible for obstruction of channels and thus of the severe reduction of ventilation observed on channel ventilated cigarettes during human smoking.

A 3-cm long metallic tube of the same diameter as a cigarette was used as the probe. The mouth-end of the tube was closed by a frosted glass piece perforated in its center so as to allow air to enter the subject's mouth with an adjustable RTD. Image of the subject's lips on the frosted glass piece was monitored by a hand-held video camera connected to the probe. The camera was linked up with a video monitor which was, in turn, linked up with a graphic printer. Snapshots of probe's end coverage by the lips were taken when the subject was taking a puff.

Two series of experiments were carried out. For the first one, 5 insertion depths of the probe in the subject's mouth were evaluated at two different RTD (80 and 150 mmWG). For the second series, 3 insertion depths were tested at a fixed RTD (100 mmWG). An approximate mean shape of tip coverage by the lips was estimated for each panelist and each tested combination of insertion depth and RTD (3).

REFERENCES

(1) Report on consumer test No C389101 from Monnin-E., dd. February 17, 1989.

(2) Report on consumer test No C289100 from Monnin-E., dd. March 9, 1989.

(3) Reports on "Lip Position on a Metallic Tip" from Monnin-E., dd. March 3 and March 22, 1989.

E. Monnin

2021608010

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : INFESTATION CONTROL

PERIOD COVERED : January to March 1989

WRITTEN BY : Freymond J.-M. (JMF)

KEYWORDS : infestation, control, program, dianex ftr, affiliate, licensee, assistance, audit

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INFESTATION CONTROL PROGRAM

OBJECTIVE

Implement the new PM infestation control program in all PME affiliate and licensee factories and warehouses.

STATUS

Visits were made and presentations of the new program were given to the management of :

- SITABAC licensee in Douala, Cameroon from January 26 to February 1, 1989.
- PM Benelux warehouses in Roosendaal (NL), Numansdorp (NL), Vlissingen (NL) and Antwerp (B) on March 8 & 9, 1989.
- SNTA licensee in Algiers, Algeria from March 13 to 19, 1989.

Visit reports are available.

PLANS

Implement the new program in other licensees according to priorities set by AOD (EEMA).

INFESTATION CONTROL IN FTR

OBJECTIVE

Ensure that the new program, including DIANEX application, is properly implemented in FTR.

STATUS

The cigarette beetle population level in the factory is very low and shows that the new program is carried out successfully.
The last application of DIANEX "space treatment" was made on March 23, 1989.
Three applications of DIANEX "surface treatment" were made on January 26, 27 and February 2, 1989. A program was set up for the determination of residual amounts of methoprene - DIANEX active ingredient - in tobacco dust samples. Thirteen sampling zones were marked on the ground in various locations of the factory. The first sampling was made on March 21, 1989. The samples were given to R&D Laboratory for the analysis of their methoprene residual content.

PLANS

Ensure DIANEX "surface treatments" every two months and "space treatments" every three months. Continue the sampling program on a monthly basis and the determination of residual content of methoprene in tobacco dust samples.

ASSISTANCE TO PM EEC

OBJECTIVE

Audit the MTI factory in Lecce (Italy) and determine whether their infestation control program fulfills PM needs.

STATUS

An overall review of the present Infestation Control situation was made on March 1 & 2, 1989. Recommendations for improvements were given in a visit report.

J.-M. Freymond

JMF/vep/April 3, 1989
qr189icjmf

2021608012

DIVISION : QUALITY ASSURANCE + TECHNICAL SERVICES

SUBJECT TITLE : QUALITY ENGINEERING

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Henry-P (HEP), Morelli-M (MMO)

KEYWORDS : machinery, qualification, rod, scanner, visual, quality, audit, focke, protos, kdf3, assessment, equipment, critical, methodology

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MACHINERY QUALIFICATION PROCEDURE

Objective

Jointly with local QA's, establish the sampling protocols for any secondary machinery which has to be qualified within PME. Three machines are in the process of being qualified.

Status

The qualification of the three following machines should take place by the second quarter of 1989.

KDF3 : Qualification should take place in Berlin.

PROTOS 100 : Pre-Qualification should take place in Berlin. The shipment of the first machines to PM-USA has been postponed.

FOCKE 700 : Qualification will take place in BOZ.

HANDBOOK FOR VISUAL QUALITY AUDIT OF FINISHED PRODUCTS

The project status is reported in the PRODUCT AUDIT GROUP part of this quarterly report.

ROD SCANNER EVALUATION

Objective

Evaluate the efficiency of "on-line" Rod Scanners available on the market, i.e. CIM from Accu-Ray and ORIS from Hauni.

Status

The presentation of the status of the project made in Lausanne in December 1988 was given to the affiliates involved in the project i.e. PMH, PMB, PMG-B and FTR.

Plans

The next steps will be to eliminate the root causes of the top 3 defects on the 4 makers in PMB as well as to further evaluate the ORIS in PMG-B.

EQUIPMENT ASSESSMENT PROGRAM

Status

The undersigned participated in the training which was given to Koerber by Barbara Meanley from Quality Engineering PM-USA on the equipment assessment program.
This program was developed in PM-USA 4 years ago in order to ensure that rebuilt and new equipment is able to produce according to our quality standards before it leaves the vendor's works. The same training was given to the majority of our secondary equipment vendors i.e. filter and cigarette makers and packers. The whole program takes about 2 days at the vendor's location.

Plan

The next assessments will apply to the first Focke 700 and to the first Proto 100 to be shipped to PM-USA during the second quarter of 1989.

STANDARDIZATION OF CRITICAL QA METHODOLOGY

Objective

Further standardize the methodology leading to data required either for legal reasons or for regional reporting.

Status

During the last QA meeting held in BOZ last February, it was decided to issue a questionaire to the affiliates in order to have a basis for further actions. A draft questionaire has been prepared and will be sent out in April 1989.

HEP/vep/April 4, 1989
qr189qehep

DIVISION : MANUFACTURING SERVICES GROUP

SUBJECT TITLE : INGREDIENTS, CASINGS & FLAVORS

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : A. Schwarb (ADS)

KEYWORDS : Ingredient, casing, flavor, prototype, trial, reformulation, evaluation

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1. INGREDIENTS

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1.1 Usage catalogues (Refs. 1 to 10)

January 26, 1989, an updated version of page 3 of the Usage of Filter Additives was issued.

At the time, some questions arose concerning the BP Chemicals Production Centers where MPEG and PEG are manufactured.

This problem is almost solved, but some technical documents from BP (M.S.D.S. and Technical Sheet) should be sent very soon to my attention, to define the manufacturing locations of these products.

1.2 Cochise PME Code 10.1800 (Refs. 11 to 13)

A meeting was held in Neuchâtel on February 17, 1989 with Mr. K.O. Thoresen who will study and make proposals to FTR to deliver PME directly with ground cocoa shells (cochise).

1.3 Propylene glycol PME Code 10.0050 (Refs. 14 to 16)

Project No 5037 - ANALCIME - Trial No. 1

Because of unsuitable processing parameters, Panel A has only screened the test for indications of trends.

Panel A recommends repeating trials with propylene glycols from ARCO and ERDOELCHEMIE and with both Standards BASF and DOW.

Product from HUELS will no longer be considered.

Project No 5037 - ANALCIME - Trial No. 2

Blends processed in the R&D Miniprimary (February 21 to 24, 1989).

MLK15 cigarettes produced in the FTR secondary (February 27, 1989).

Smoke yields of both prototypes correspond to regular production of MLK15.

R&D Panel B did not find a significant difference between BASF and ARCO or ERDOELCHEMIE.

R&D Panel B found a significant difference at the 99% significance level between BASF and DOW.

Panel A evaluation is planned for April 18, 1989.

1.4 Powder licorice PME Code 10.1850

1.4.1 Project ALLANITE - Fertilizers & Chemicals

(Refs 17 to 21)

F&C powder licorice "ZD 16" quality is a valid option to the currently used MAFCO's Ship Brand Spray Dried.

1.4.2 Other suppliers (Refs. 22 to 30)

R&D is currently examining laboratory samples from Ambrosius, Hamburg, West Germany.
(Manufacturer : ETAS, Izmir, Turkey).
* Quality Smyrna
* Quality SP 511-75

R&D expects to receive laboratory samples very soon from :
* EVD, Gardanne, France
* Sistas, Siirt, Turkey
* Ambrosius, Hamburg, West Germany
  (Manufacturer : National Manufacturing Shiraz, IRAN, Type 006774).

1.5 Block licorice PME Code 10.1800

1.5.1 Project No 5038 - ANATASE - Trial No. 1

R&D Miniprimary test are planned with :
* EVD, Gardanne, France Quality 448
* SISTAS, Siirt, Turkey Quality 9-12%

Blends MA020 will be processed during week 16. MAK08 cigarettes will be produced during week 16 or 17.

2021608018

1.5.2 Other suppliers (Refs. 24, 25, 28 to 33)

R&D is currently examining laboratory samples from Ambrosius, Hamburg, West Germany.
(Manufacturers : ETAS, Izmir, Turkey).
* Quality X
* Quality MBC

R&D contacted ZOSTER SA, Murcia, Spain to request samples. Zoster answered that unfortunately they do not have a product corresponding to PME requirements.

2. ASSISTANCE TO PME AFFILIATES

2.1 Transfer of FTR casing kitchen recipes from MSG to QC-FTR

(Ref. 34)

Since January 23, 1989, QC-FTR is responsible for providing FTR casing kitchen with daily recipes.

However it should be noted that MSG (A. Schwarb) is still responsible for all tests and queries relating to ingredients and solutions.

All the people concerned by these changes were informed and QC-FTR staff were trained.

2.2 Utilization of CA-INM-FI (PME Code 21.0010) by FTR

(Ref. 35)

Since the beginning of February 1989, FTR produces all black semi-filters with solution CA-INM-FI (same as Intertaba) instead of the previous CA-50-FI.

Procedures for preparation and checking were issued.

REFERENCES

1) Memo "Usage of Filter Additives" from A. Schwarb dated January 26, 1989.

2) Profs note "Breox-PEG 600 ex-BP" from Mr. L. Rinaldi to A. Schwarb, dated February 15, 1989.

3) Profs note "Breox-PEG 600 ex-BP" from A. Schwarb to FTR Purchasing Department dated February 15, 1989.

4) Profs note "Breox-PEG 600 PME Code 20.0050" from A. Schwarb to Mr. L. Rinaldi dated February 20, 1989.

5) Telefax from BP Switzerland, Zurich to Mr. J.-B. Hadorn dated February 28, 1989.

6) Telex "Polyethylene Glycol 600" from A. Schwarb, to BP Chemicals, London, UK dated March 2, 1989.

7) Telefax "Production Centers Breox PEG and MPEG" from Mr. L. Rinaldi to A. Schwarb, dated March 7, 1989.

8) Telex "Polyethylene Glycol 600" from A. Schwarb, to BP Chemicals, Hythe, UK (Mr. S. Pozzi) dated March 7, 1989.

9) Telex "Breox PEG's" from Mr. S. Pozzi to A. Schwarb, dated March 8, 1989.

10) Telex "Breox MPEG's and PEG's" from A. Schwarb to Mr. S. Pozzi dated April 3, 1989.

11) Status Report "Tests Cochise", see Profs note from A. Schwarb to Messrs A. Peier and S. Sommer dated January 25, 1989.

12) Note to the file "Grind Cocoa Shells EVD" from Mr. S. Sommer dated February 28, 1989.

13) Profs note "Cochise" from A. Schwarb to Mr. S. Sommer dated March 7, 1989.

14) Report "Analcime No 5037 - Trial 1" from A. Schwarb dated February 9, 1989.

15) Profs note "Feuilles Jaunes" from A. Schwarb to Mr. W. Truessel dated February 10, 1989.

16) Memo "Propylene Glycol 1, 2 USP 21 votre ordre 275139.00" from Mr. J.-B. Hadorn to HUELS AG, Rufenacht, CH dated March 8, 1989.

17) "Project ALLANITE - Consumer Test C 289100" from Ms E. Monnin dated March 9, 1989.

18) "Project No 5035 - ALLANITE - Final Report" from Mr. C. Besso dated March 13, 1989.

19) Telex "Licorice in powder 'ZD16' quality" from A. Schwarb to PME Purchasing dated March 15, 1989.

20) Telex "Licorice in powder 'ZD16' quality" from A. Schwarb to F&C, Israel (Mr. I. Engelberg) dated March 15, 1989.

21) Report "Licorice in powder 'ZD16' quality from F&C, Israel" from A. Schwarb dated March 15, 1989.

22) Status Report "Tests 'Licorice in powder'", see Profs note from A. Schwarb to Mr. P. Stolt dated January 19, 1989.

23) Status Report - Profs note "Trials licorice in powder" from A. Schwarb to Messrs A. Peier and S. Sommer dated January 25, 1989.

24) TELEXES "Licorices in blocks and in powder" from A. Schwarb to Ambrosius, West Germany (Mr. U. Schmanns) dated February 3, 1989 and February 14, 1989 and April 3, 1989.

25) TELEXES "Licorices in blocks and powders" from Mr. U. Schmanns to A. Schwarb dated February 10, 1989 and February 16, 1989 and March 31, 1989.

26) TELEX "Echantillon de réglisse en poudre" from A. Schwarb to EVD, France (Mme D. Petitbois) dated January 31, 1989.

27) Profs note "Echantillons réglisse en poudre de EVD" from A. Schwarb to Mr. D. Turpin dated March 15, 1989.

28) TELEX "PME Requirements for licorices" from A. Schwarb to SISTAS, Turkey (Mr. F. Tasci) dated March 16, 1989.

29) Report of visit "SISTAS" from Mr. S. Sommer dated March 15, 1989.

30) "Visit report of SISTAS" from A. Schwarb dated March 16, 1989.

31) Status Report - Profs note "Tests 'Licorice in blocks'" from A. Schwarb to Messrs A. Peier and S. Sommer dated January 25, 1989.

32) FAX "Block licorice" from A. Schwarb to ZOSTER SA, Murcia, Spain dated January 16, 1989.

33) TELEX from ZOSTER, Spain to A. Schwarb dated January 18, 1989.

34) Memo "Transfert des recettes cuisines FTR du MSG au QC-FTR" from A. Schwarb dated January 18, 1989.

35) Profs note "Utilisation de CA-INM-FI aux FTR" from A. Schwarb to Mr. M. Grossmann dated January 24 and March 28, 1989.

A. Schwarb

A. Schwarb

ADS/mch/April 6, 1989
qr189icfads

DIVISION : MANUFACTURING SERVICES GROUP

SUBJECT TITLE : INGREDIENT AND MATERIAL EVALUATION

PERIOD COVERED : JANUARY - MARCH 1989

WRITTEN BY : Flury-C. (CAF)

KEYWORDS : material,trial,test,evolution,meeting, filtration,filter,plug,wrap,cigarette,paper, tipping

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OBJECTIVE

Evaluate alternative direct materials and ingredients for filters and cigarettes in order to optimize product quality and cost.

IMPORTANT ACHIEVEMENTS 1st QUARTER

In August 1988, a confirmation test was initiated with licorice powder supplied by F & C Fertilizers & Chemicals, Haifa, following the receipt of a 10 ton delivery of this material which seemed to be the source of a doubtful product taste. The test was successful and the qualification is confirmed.

Three important qualifications were achieved regarding cigarette papers:

a) Suppression of Sch & H Pela 44 Mn and its replacement by Pela 46 Mn, on the Swiss Ambassador and four other brands.

b) Use of the 100% woodpulp paper from Schoeller & Hoesch, Pela 54 Mn, on the German Marlboro.

c) Use of Sch & H Pela papers on the Merit family. This approval refers to both permeability levels (Pela 34 MnC and Pela 42 MnC. The equivalent papers from Mauduit and Wattens continue to be qualified, for Merit cigarettes.

The problems encountered at PM-UK with cigarette seam gluing will be solved, as their non-standard glue from National Adhesive will be replaced by glue Lesso 5067/1, on Raffles.

IMPORTANT ONGOING TRIALS

An intermediate report was issued after successful termination of phase 1 of the project "Small granulometry charcoal". Phase 2 was started: Production of another set of filters, according to different specifications and with two types of charcoal (different activity).

Some problems were encountered unexpectedly during the qualification of tow Courtaulds 3.0/35Y on the Marlboros produced by PMB and by two licensees. The choice of another approach regarding this test series is under discussion. Meanwhile, the tests referring to Courtaulds tows 2.1/42Y and 2.5/30Y are suspended.

Superpositioning laboratory tests made with all qualified and new high-porous plug wraps showed uncoherent, hardly explainable relationships between the different paper permeability levels. So as to come to grips with this phenomenon, a Philip Morris Super Lights test cigarette was produced, using plug wraps Schoeller & Hoesch 9500 and 10'000, Mauduit PPW 120 and PPW 140 (new version) as well as Dexter. Highly selected cigarettes are now being tested regarding their ventilation.

The results obtained from the two Malaucène cork tipping samples with laser-spray perforation are not satisfactory. The coefficient of variation is too high. In addition, the performance of a laser-spray tipping differs from that of an electro-perforated tipping having the same porosity target. These findings were presented to the supplier in a meeting end March. Although Malaucène had no immediate explanation for our findings, they intend to submit another set of samples some months from now.

Project FITIA (Filter Tip Attachment) is making satisfactory progress. Details see attached extract of Status Report Nr 42, dated 16.03.1989.

An industrial pilot test is run at PMH, referring to the comparison of tipping glue Lesso 1516G to the two newly qualified glues Lesso 1520 and Türmer CF 510.

C. Flury

CAF/April 4, 1989
qr189imecaf

Attachment 1 : Page 6, PROJECT FITIA", extracted of the MATERIAL EVOLUTION - Status Report Nr 42, dated 16.03.1989

2021608024

Issued by:
R & D Manufacturing Services Group

* = New trial.
** = Will be dropped (next report).

SUPPLIER	TESTED QUALITY	STANDARD MATERIAL	REASON FOR TEST	BRAND	TEST AT	BY	..

P R O J E C T F I T I A (Filter Tip Attachment):
Objective: Improve gluing of tippings to filter plug and tobacco rod;
good machinability (envelope, gluing) at speeds up to 8000 cig./min.

SUMMARY Regarding Benkert Blancophan 390:

Machinability/Gluing Properties:
The industrial tests terminated so-far showed similar machinability properties between Blancophan 36A and Blancophan 390, or a slight improvement for Blancophan 390.

Commercial Aspect:
- Blancophan 390 is expected to be slightly cheaper than Blancophan 36A.
- Benkert obtains Blancophan 390 from a different source than Blancophan 36A.
  We have to investigate and discuss his intentions/possibilities.
  The question must also be discussed if the quality of Blancophan 36A should be upgrated.

Approvals:
LMBG / Taste approvals: Panels B OK on PMU03, MER13, MAB01/MAH01, MLX12
Panel A OK on PMU03 (includes new perforation L5R/400)

Planned:
a) Terminate test runs at PMG Berlin (MLX12) and PMG Munich(PMU03); obtain and evaluate test reports.
b) Meet with Benkert in Neuchâtel, with representatives FTR / PMG / R&D / MPP to
   - Allow Benkert to assist at last test run (Merit, FTR)
   - Discuss test results, status, further action, commercial aspects, etc

SUMMARY Regarding Malaucène LS 944 BNG:

Machinability-Gluing Properties:
- LS 944 BNG is a clear improvement compared to 944 BNG.
- For the time being, 4 cigarettes product specs foresee LS base paper:
  MAG (TP112), MAT (TP119), BRT TP147) and MAK05/06 (TP247)

Commercial Aspect:
- For white tippings with cork print, the same price will be applicable ("old" and the "new" base paper).
  As regards tippings of the 3-colour type, LS 944 BNG costs approx. 6% more than 944 BNG for MAK/MAC/MAG, respectively 8% more for MPH. Estimated increase company wide: Approx. 77'000 $ p.a.
- Malaucène's intentions/possibilities and a PM decision are still to be discussed.

Approvals:
LMBG / Taste : Panels B OK on PMT02, MAG02/MAT01
Machinability: MAG02, with Baumgartner PSP filter +S&H 9500, with TP perforation 4M 0.22.7.5.

Planned:
a) Finish trial at PMG Berlin (PMT02) and evaluate results.
b) Decision (by MSG and FTR) to change some more cigarettes to LS paper.
c) Terminate trial PMT02 at PMG Berlin and evaluate test report, then initiate confirmation tests at PMG Munich and PMH.
   Note: Trials on white filters only, as long as INB's FU-POV 8250 is not repl.by FU-POV 10'000.

2021608025

Form.685

Issued by:
R & D Manufacturing Services Group

* = New trial.
** = Will be dropped (next report).

SUPPLIER	TESTED QUALITY	STANDARD MATERIAL	REASON FOR TEST	BRAND	TEST AT	BY	..

P R O J E C T F I T I A (Filter Tip Attachment):
Objective: Improve gluing of tippings to filter plug and tobacco rod;
good machinability (envelope, gluing) at speeds up to 8000 cig./min.

SUMMARY Regarding Benkert Blancophan 390:

Machinability/Gluing Properties:
The industrial tests terminated so-far showed similar machinability properties between Blancophan 36A and Blancophan 390, or a slight improvement for Blancophan 390.

Commercial Aspect:
- Blancophan 390 is expected to be slightly cheaper than Blancophan 36A.
- Benkert obtains Blancophan 390 from a different source than Blancophan 36A.
  We have to investigate and discuss his intentions/possibilities.
  The question must also be discussed if the quality of Blancophan 36A should be upgrated.

Approvals:
LMBG / Taste approvals: Panels B OK on PMU03, MER13, MAB01/MAH01, MLX12
Panel A OK on PMU03 (includes new perforation L5R/400)

Planned:
a) Terminate test runs at PMG Berlin (MLX12) and PMG Munich(PMU03); obtain and evaluate test reports.
b) Meet with Benkert in Neuchâtel, with representatives FTR / PMG / R&D / MPP to
   - Allow Benkert to assist at last test run (Merit, FTR)
   - Discuss test results, status, further action, commercial aspects, etc

SUMMARY Regarding Malaucène LS 944 BNG:

Machinability-Gluing Properties:
- LS 944 BNG is a clear improvement compared to 944 BNG.
- For the time being, 4 cigarettes product specs foresee LS base paper:
  MAG (TP112), MAT (TP119), BRT TP147) and MAK05/06 (TP247)

Commercial Aspect:
- For white tippings with cork print, the same price will be applicable ("old" and the "new" base paper).
  As regards tippings of the 3-colour type, LS 944 BNG costs approx. 6% more than 944 BNG for MAK/MAC/MAG, respectively 8% more for MPH. Estimated increase company wide: Approx. 77'000 $ p.a.
- Malaucène's intentions/possibilities and a PM decision are still to be discussed.

Approvals:
LMBG / Taste : Panels B OK on PMT02, MAG02/MAT01
Machinability: MAG02, with Baumgartner PSP filter +S&H 9500, with TP perforation 4M 0.22.7.5.

Planned:
a) Finish trial at PMG Berlin (PMT02) and evaluate results.
b) Decision (by MSG and FTR) to change some more cigarettes to LS paper.
c) Terminate trial PMT02 at PMG Berlin and evaluate test report, then initiate confirmation tests at PMG Munich and PMH.
   Note: Trials on white filters only, as long as INB's FU-POV 8250 is not repl.by FU-POV 10'000.

Form.685

DIVISION : MANUFACTURING SERVICES GROUP

SUBJECT TITLE : PRODUCT MONITORING AND CHANGES (AFFILIATES)

PERIOD COVERED : JANUARY - March 1989

WRITTEN BY : Bel-T. (THB)
Flury-C. (CAF)

KEYWORDS : product,specifications,monitoring, quality,improvement,implementation, modifications,changes,cigarette

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OBJECTIVE

Monitor product quality and implement cigarette construction modifications when necessary, to ensure that the quality objectives and specifications of the product are met.

GENERAL

During the 1st quarter 1989, 35 cigarette product specifications were updated by Manufacturing Services and 10 cigarette product specifications were prepared or updated on behalf of Product Development. 25 filter specifications were written.

Monitoring Meetings were held in March, in Bergen op Zoom, Munich, and Neuchâtel.

RESULTS (IMPLEMENTED PRODUCT MODIFICATIONS)

The following important changes were implemented:

a) Standardisation of filters, with adaptation of the tipping paper perforation, for Marlboro Lights 100s cigarettes on the one hand (at PMH and PMG, cigarettes MHX01/03/05/06/08), and for Ambassador King Size cigarettes on the other hand (MAK05/06 at FTR and MAJ01/02 at PMH).

b) The targets "Smoke and physical specifications" were modified for two L & M cigarettes (LMG02 and LMX01) and for Bastos (BAS01).

PLANS (AUTHORIZED MODIFICATIONS)

The following modifications are approved, but not yet introduced:

a) Cigarettes Multifilter 100s (MPH02/11/13/14/15/17 and MPI02) with cigarette paper Pela 44 Mn or Mauduit 155 A replaced by Pela 54 Mn, to adjust smoke yield.

b) German Marlboro (MLK37) with higher-porous cigarette paper and with different filter, so as to obtain the specified smoke yield.

c) Standardisation regarding cigarette papers: Wattens W 100 is replaced by Mauduit 110-6 HFE, on two Bond Street cigarettes (BDM01, BDY01), and Schoeller & Hoesch Pela 44 Mn is replaced by Pela 46 Mn on the Swiss Ambassador King Size (MAK08) and four other brands.

d) On FTR's Merit cigarettes (MER13/16 and MEM01), the low-porous cigarette paper will be replaced by its high-porous counterpart, so as to respect the smoke yield specification.

e) Switch from the low-porous cigarette paper Mauduit 137-1 HFE LMP back to the high-porous version Mauduit 110-6 HFE LMP, so as to obtain the smoke yield specified for Raffles 100s.

T. Bel C. Flury

CAF/April 04, 1989
qr189pmthb

2021608028

DIVISION : EDP SUPPORT

SUBJECT TITLE : COMPUTER APPLICATIONS

PERIOD COVERED : JANUARY-MARCH 1989

WRITTEN BY : WONG-Y. (YIW)

KEYWORDS : COLDAC, database, cigarette modelling, process, GIOTTO, quality audit, TLA, TQA, CDB, Beckman/CALS, Simulation

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NEW ORGANIZATION

Our division underwent an internal reorganization in mid-January; new functions of project management and technical support have been defined. Following this change, the resource allocation for all applications was redefined.

QUARTERLY STATUS REPORT

A new document, covering the status of existing applications and new user requested projects for the first quarter, has been produced and reviewed by the head and user coordinator of each department.

CDB - CIGARETTE DATA BANK

Additional requirements of criteria and data items for query of CDB has been requested by Product Development people. A FOCUS master file with required data elements has been defined. The input to create the physical database is to be taken from existing CDB data stored in CICS production environment which requires the expertise of the FTR/ICS department to perform the data file extraction.

The development on our side, which is now interrupted, will be resumed as soon as the required data can be provided by ICS, i.e., during the second week in April.

PROJECT-COST/REBILLING APPLICATION

Due to the interruption of CDB development, it has been possible to transfer our resource to this application. The following functions were required to enhance on-line access to the system:

- Direct control of total-worked and introduction of various projects
- Easier selection of time sheet
- On-line access to project list by cost-center responsible
- On-line access to time sheets for cost-center responsible.
- Query facility of FOCUS database

Their implementation is scheduled for completion mid-April.

BLEND SIMULATION

A new blend coding system is in the process of being defined by Product Development Division and Leaf Department in HQ Lausanne. Significant modification will be required to the blend simulation programs to comply with the new input. We are awaiting user's decision to move on.

Short term modification:

- A new version of the program SPTRANS (special transformation) which calculates the influence of casing on the yields of TLA cigarette has been put into production; it requires manual data entry; results of prediction are given in print-out forms.
- Calculation of total % of ET, HT, IS, correction factor B and filter efficiencies were introduced in the tobacco yields prediction program.

NON-TOBACCO MATERIAL INSPECTION

With a view to integrate FTR/R&D, PMG and PMH material test data into an unique PM European data base, it is clear that the system concept and data structure defined in the initial study have to be revised; the scope of the implementation strategy should also be widened.

System analysis of logical data structure for this application is now underway. Part-time dedicated user has been provided for definition of functional specifications (from R&D point of view for the time being). Work for this business study phase has progressed slowly.

SMOKING LAB / QC AUTOMATION

The CALS database configuration has been completed. All the physical and analytical tests as well as their calculation procedures are defined in CALS dictionaries. Screen forms in relation to sample management, manual data entry and sample result display have been defined and reviewed by users. Report generation is in the process of being defined by the laboratory supervisor.

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Designs for management of the cigarette stock location and for the creation of the smoke runs have been made. These will use external LIL (Laboratory Interface Language) programs to query and update the database through IDAS (Instrument Data Acquisition System) transactions.

Various irritating weaknesses, inconsistancies,and bugs were discovered in the CALS software. Inelegant work-arounds are possible in some cases, in others, the weaknesses must be accepted.

Currently, our major effort is put on the development of data acquisition units and work-stations using Beckman Digimetry equipment. Our immediate objective is to replace some of the existing HP datacap units in the COLDAC system as they are no longer supported commercially and technically by HP.

Data exchange between VAX and digimetry through the Ungermann-Bass Net-one LAN was tested with success.

COLDAC SMOKING LABORATORY SYSTEM

We are continuously confronted with hardware problems on the old HP equipment (datacap, terminal, printer).

Decision has been made to replace the current CO/NO post based on HP-9825 processor by interfacing the digimetry/LIL acquisition program to the HP-1000 system. The instrument group supplied the smoke machine simulator and voltmeters for testing.

The HP-1000 software maintenance contract was cancelled.

The report of TAR values for a product was expanded. It includes now the means and standard deviations calculated globally over all the values of samples and over all smoking ports. Smoke Nicotine values are reported in the same manner.

GIOTTO - TOBACCO PROCESS QUALITY ASSESSMENT

Presentation of the CUSUM (Cumulated Sums) control chart technique and partial results based on a subset of GIOTTO data has been given by Dr. Graf, our statistical consultant, to project leaders of Process Development Division. Data analysis up till now has been limited to the processes 15, 18, 22 and the two parameters CCV and % on 6 mesh. Results are promising. Routine method of process control remains to be developed.

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REPLACEMENT OF IBM-8100 WORDPROCESSOR

Following the decision to withdraw the IBM-8100 system at the end of this year, work has begun on system analysis, on behalf of the Manufacturing Services, for developing a specification management tool to replace the current one in use. In agreement with the user management and also for the benefit of gaining experience in business study techniques, the scope of this study is being widened to the entire Manufacturing Services group. Assistance is being provided by the Department of System Development Operations of EEC-HQ (M. Messier) for conducting workshop, SSAD design and "walkthrough".

In the secretarial area, a PC-based workstation will be provided with appropriate software and training.

DATA RESOURCES MANAGEMENT

A presentation of this entire area was made to us by P. Chable of EEC HQ. He provided several documents and concepts for our review. This aspect of our responsibilities will be evaluated during the process of conversion to the EDC environment.

PROFS TRAINING

There are now 82 "userids" and 94 "nicknames" in R&D

HARDWARE/SOFTWARE - INSTALLED/ORDERED

2 IBM-3192-G (Graphics) terminals isntalled
6 IBM-PS/2 Systems received and installed
1 IBM-3812 laser printer installed

YIW/ell/12.04.89

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